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Martians, Go Home BY FREDERICK BROWN

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Astounding

SCIENCE FICTION

VOLUME LIV • NUMBER 1

September 1954

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COVER BY FREAS • Illustrations by Freos, Shopira and van Dangen
Symbol: Optical confusion. The eye cannot simultaneously focus on
pure red and pure blue.

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Astounding SCIENCE FICTION published monthly by Street & Smith Publications, Incorporated at 575 Madison Avenue, New York 22, New York. Gerald H. Smith, President, Ralph K. Whittaker, Jr., Executive Vice President, Arthur P. Lawler, Vice President and Secretary, Thomas H. Kaiser, Treasurer. Copyright 1954 by Street & Smith Publications, Inc., in the United States and countries signatory to the Berne Convention and Pan American Convention. Entered as Second Class matter at the Post Office, New York, N. Y. Subscriptions \$1.50 for one year and \$6.00 for two years in United States, Possessions and Canada; \$4.75 for one year and \$8.00 for two years in Pan American Union, Philippine Islands and Spain. Elsewhere \$5.00 for one year and \$8.50 for two years. When possible allow four weeks for change of address. Give old address and new address when notifying us. We cannot accept responsibility for unsolicited manuscripts or art work. Any material submitted must include return postage. All subscriptions should be addressed to Subscription Dept., Street & Smith Publications, Incorporated, 304 East 45th Street, New York 17, New York.

\$3.50 per Year in U.S.A.

Printed in  the U.S.A.

35 cents per Copy

BREAKTHROUGH

When the actual nature of the radiations from uranium ore was worked out, and it was finally realized that atoms *could* be broken down into subatomic particles, no very practical advance had been made. The discovery was purely theoretical, an academic revision of a theoretical concept of atoms.

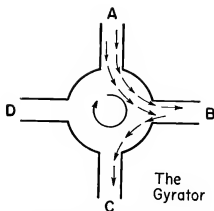
Its consequences, its implications, however, were something else. It was a breakthrough to a new level of understanding; it changed the whole concept of the structure of matter. Also—and this I think you'll find is typical of advances in understanding—when the subatomic particles were understood, the whole concept of cosmology was revised. Where, before, the Sun could have been luminous for not more than two million years, and all the history of life on Earth had to be compressed into that moment of time, the new understanding extended the possible life of a star to billions of years.

I think there's another breakthrough under way. It has to do—

now—with a harmless little gimmick, a device called a "gyrator." If my hunch is right, it will lead to a new understanding of the Universe that will make such changes in the Second Law of Thermodynamics, and the Laws of Motion, as to make them almost unrecognizable. Relativity didn't exactly eliminate the Law of Conservation of Energy—but it made it look so different that a scientist of the 1890 period wouldn't have considered it the same law.

The gyrator rotates energy. It's a static device that permits energy to flow from a source A to a point B, but prevents the same type of energy at B from flowing back toward A. If the energy form happened to be heat, and A was a cool body, and B a hot one—the heat would flow from the cool to the hot body, and would *not* be able to flow back.

First, let's consider a completely generalized, theoretical concept of an energy-flow-rotator, without asking how to make one. We'll diagram it thus:



We'll arbitrarily define our Energy-Flow-Rotator, or EFR, as being capable of rotating an energy-flow 90° . Then energy entering from A is rotated 90° , and goes to B, while energy from B, entering the EFR, is equally rotated 90° and goes to C. Of course, energy from C will go to D, and energy entering at D will flow to A. Now, if D is a low-energy system, a "cold" system, little or no energy will come from D to A. But, if B is a very hot system—A will be able to feed energy into it. We'll have the situation of a cold body emitting heat that flows to a hot body, without receiving energy from the hot body.

We have, in other words, put the energy-flows out of phase. The Newtonian law that "action and reaction are equal and opposite" is, in the terms of the modern controls-system engineer, simply an expression of the concept "There is one hundred per cent negative feedback in the Uni-

verse." Every action generates an out-of-phase signal of equal magnitude, and thus cancels itself.

Now there are two kinds of "static" situations—a dynamic-static balance, and a true static situation. Two men wrestling may both be pushing violently, and producing zero net motion—or they may be simply lying there resting. The net motion result is the same.

Suppose you take two rods, an inch in diameter, and a foot long. The ends of the rods are cut off square, and they are stood one on top of the other on a flat metal plate. Another plate is balanced on the top rod, and a one thousand pound weight put on it. The net result is precisely the same as though no weight at all were put there—apparently.

However, if a slight force is used to disturb the exact alignment of the equal and opposite forces on the rods—the collapse of the loaded system is decidedly vigorous.

The system is beautifully stable, so long as the forces are *exactly* opposite in phase—as long as they are equal and opposite. Get them out of exact phase-opposition, however, introduce a little angular rotation—and the results can be rather drastic.

If you build an amplifier with one hundred per cent—or nearly one hundred per cent—negative feedback, it's exceedingly stable. It cannot be made to oscillate; it reproduces, at its output, precisely what was

imposed at its input. It displays the characteristics of a "rigid" system.

But, if you introduce some phase rotation, peculiar things start happening. If the phase rotation reaches 180° , the feedback is positive, and the amplifier becomes an oscillator, expending all the energy it can get in violent oscillation.

What would happen if an energy-flow could be rotated in such a manner as to make the phase-relationship between input and output *not* equal and opposite?

Any feedback system has a certain time-lag characteristic of its component structure. If we just imagine, for the fun of it, that Newton's Law expresses the fact that the Universe *has* a negative feedback loop somehow, then we can consider what would happen if the characteristic time-delay of that loop were interfered with. If an effort were made to drive a signal through the system too fast, the negative-feedback loop might get out of phase, and produce a positive feedback—the system might tend to "take off" as an electronics engineer would say—go into oscillation. The *apparent* result would be that the characteristics of the system would go asymptotic; some of them would tend to shoot up toward infinity, while others dropped abruptly toward zero.

In fact, we'd expect the thing to act in such a manner that, if we sent a signal at the characteristic velocity

of the system, which we can call c , that behavior would be wildly inverted. At c , the time-lag would *appear* to be zero, while infinite power would appear to be involved.

Of course, at $2c$, the feedback would again be negative, and the system would appear to have the same characteristics it did at very low signal-rates.

In between, though, it would have characteristics beautifully described by the Relativity formulas.

Rotating energy-flows might have some exceedingly important consequences—including the consequence that you could, by not-too-bright experimenting, get your fingers most fantastically burned. There must be something quite remarkably potent around in the area of slight displacement of the natural, balanced energy-flows.

Also, it's interesting to consider what rotating reaction-forces would permit. It's perfectly true that the rotation concept merely *displaces*, and does not *eliminate*, the reaction—but what *more* do we want? It wouldn't lead to a reactionless drive, of course—but all we want is something that displaces the reaction to make that negative feedback *not* perfect and balanced.

There are some highly interesting possibilities in the idea of energy flow rotation. So far, however, the best that has been achieved is a very small step.

But that step *has* been achieved.

The specific devices are of two types: one uses a germanium crystal in a magnetic field, and applies the Hall Effect to rotate an electric current flow. The other uses a synthetic ferrite in a magnetic field, applying the Faraday effect, which rotates the plane of polarized electromagnetic energy. Both devices are static devices, in that permanent magnets, and permanent atomic structures—germanium crystal in one case, the ferrite material in the other—produce the desired rotation of energy.

If vertically polarized energy enters a ferrite disk in a magnetic field, by proper adjustment of the magnetic field strength, and the length of path through the ferrite, and the characteristics of the ferrite itself, a predetermined, desired degree of rotation can be obtained. If the rotation is 90°, then the energy leaving the disk will be horizontally polarized.

One application is in microwave radio work; vertically polarized energy from a transmitter is rotated 45° and goes into an antenna feeder. Energy from the antenna feeder will be rotated 45°—but in the same sense, yielding energy horizontally polarized, and unable to enter the transmitter. But easily able to enter a horizontally polarized receiver input!

The result is a system wherein the vertically polarized transmitter can *not* feed into the horizontally polarized receiver, but can feed into the antenna

—while the antenna can *not* feed into the transmitter, but can feed into the receiver.

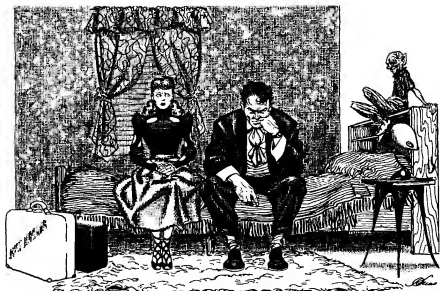
The germanium crystal device works with electric current; referring to our theoretical diagram of the hypothetical energy-flow-rotator, a magnetic field—a permanent magnet—through the plane of the paper vertically causes electrons entering at A to start toward C, but to be deflected toward B. Electrons entering at B would, in turn, be deflected toward C—they would *not* return toward A.

The Hall Effect has long been known; the degree to which it is manifested is a function of three variables; the current flowing in the conductor, the strength of the magnetic field—and the characteristics of the conductor. For germanium, the effect is very extreme. For copper, it's barely detectable.

But the principle is there; an energy flow is being rotated in such a way that the reaction does *not* meet and cancel the action!

Of course, energy *is* conserved, and the net of action and all reactions *is* zero—but who's trying to move the center of mass of All Totality? Who wants to? If we can work it so that only by considering Totality Entire can you make the actions and reactions balance—why fine! We've moved *within* Totality, which is all anybody asked for—so far.

THE EDITOR.



MARTIANS, GO HOME!

BY FREDRIC BROWN

If somebody can't touch you, and you can't touch him, it's obvious he can't hurt you. Even children know that; they have a rhyme about ". . . but names can never hurt me." It's obviously true . . . or is it?

Illustrated by Freas

Nineteen hundred and sixty-four, that was the year. That was the year the Martians came.

And about time, considering how long we'd been waiting for them. No one can deny that the preceding

century in general, and the preceding half century in particular, had prepared us. Or should have prepared us.

You might say it started with Schiaparelli, the Italian astronomer who discovered the canals, although

it would be fairer to give the blame or credit to Lowell, the American astronomer, who popularized them. Schiaparelli had never claimed that they were artificial constructions; he'd named them *canali*, the Italian word for "channels." It was Lowell who became convinced—and who carried with him a large proportion of the public, if a small proportion of other astronomers—that the canals were literally canals. Which meant that they were the handiwork of intelligent beings and that Mars, like Earth, was a populated world. And that, of course, led to much interested speculation on the subject: populated by *what*?

Not by people just like us, certainly. Granting that, on separate but identical worlds, evolution might conceivably follow the same path on each, it remained that Earth and Mars were not identical worlds. There were considerable differences in temperature range and gravity, more than considerable differences in atmosphere and amount of water. There were those among the scientists who claimed that these differences were so great that life could not possibly have evolved on Mars. They were answered by those who pointed out that, although *life as we know it* might not have evolved there, life in some other form might have. They were answered even more effectively by the increasing acceptance by astronomers that vegetation at least existed on Mars; certain local seasonal color changes could be explained no

other way. And vegetation is life. Possibly, under such different conditions, vegetation might even have evolved into intelligent life. Maybe Martians were walking vegetables.

Or you might say that H. G. Wells started it when, in 1895, he wrote his superlative "War of the Worlds," the classic novel describing the invasion of Earth by octopuslike Martians who bridged space in projectiles fired from guns on Mars.

Yes, that book, which became tremendously and deservedly popular, might well have started it. But you'll have to give another Welles, one Orson, credit for an assist. On Halloween eve in 1938 he proved that some of us were even then ready to believe in a Martian invasion. His radio broadcast that evening was a dramatization of Wells' book and thousands of people all over the country, having tuned in late and missed the announcement that they were listening to drama, believed it as fact. The Martians had landed and were licking the hell out of us. According to their natures, these people ran to hide under their beds or out into the streets with shotguns to look for Martians.

The Germans helped, with V-2 rockets over the channel into England. If a rocket can cross a channel, why not space? As soon as we took care of the Nazis and the Japs—

The A-bomb. People quit doubting that there was *anything* science couldn't do.

Experimental rockets already pushing outside the atmosphere from White Sands, New Mexico. A space station planned. Soon the Moon. Not long after that, Mars.

Looked like we were going to make it first. What was wrong with the Martians? Stupid? Their world and their civilization were much older than ours—because, being a smaller planet, it had cooled more quickly, giving them a faster start—so why hadn't they developed space-flight long ago. Why hadn't they visited us? (Or *had* they? That opened up new fields of speculation.)

Or *were* they beating us to it at the last minute?

There were the flying saucers. (Of course we know now what they really were, but people didn't know then. And what was more logical than to assume, as many did, that they were extraterrestrial and probably Martian. But why, people wondered, didn't they land?)

Radar getting a signal reflected from the Moon. The H-bomb. The atomic submarine. Metzite, in 1961. Anything could happen.

Not only the Western Hemisphere was affected. The infection spread and with it the conviction that we were not alone in the universe. There was the Jap in Yamanashi who claimed to be a Martian—and got himself killed by a mob that believed him. There were the Singapore riots of 1962, and

it is known by most people that the Philippine Rebellion in that same year was sparked by a secret cult among the Moros which claimed to be in mystic communication with the Martians and acting under their advice and guidance. And in 1964 there was the tragic case of the two American Army fliers who were forced to make an emergency landing of the experimental stratojet they were testing. They landed south of the border and were immediately and enthusiastically killed by Mexicans, who, because of their spacesuits and helmets, took them to be Martians.

It has been argued whether the sudden burgeoning of that form of imaginative literature called science fiction that took place in the '40s and '50s was a cause, or a result, of the public's increasing awareness of the possibility of intelligences other than our own on other worlds, and of the probable imminence of our coming into contact with them either through our own efforts or through theirs. Whichever is the case, science fiction burgeoned, threatening, by the early '60s, to push both mysteries and Westerns off the newsstands.

And science fiction, among its other themes, rang all the changes—we thought—on an invasion of Earth by the Martians and especially on the form of the Martians themselves. No two writers, of course, agreed on what the Martians would be like and the guesses were high, wide and handsome,

ranging from tall blue shadows through fireballs to microscopic reptiles and ambulatory flowers.

No one, but no one, guessed the truth.

For the simple reason that from the very earliest days of modern science fiction, from the days when it was read only by a small group of aficionados, the truth had been a joke and a cliché. No writer would have been so banal as to use it—except jokingly.

But fact is no respecter of clichés. The Martians really *were* little green men. But with a difference.

II.

The evening of March 26, 1964, a Thursday: (But Thursday evening covers a lot of territory. We can't look at all of it at once. So let's look at Luke Devereaux. Why him? Why not; we've got to start somewhere. And, as a science-fiction writer, he should have been more prepared than most people for what was going to happen.)

Meet Luke Devereaux. Thirty-seven, five feet ten and a quarter, a hundred forty-two pounds. Wild red hair that wouldn't stay in place without hair dressing; and he never used hair dressing. A long thin nose—a good nose for looking down—blue eyes which could, and often did, stare at things without seeing them at all. Dressed at the moment—8:14 P.M. Pacific Standard Time—in a well-worn sweat shirt

emblazoned L. A. C. C., a pair of faded denim Levis and a pair of loafers.

Don't be fooled by the L. A. C. C. on the sweat shirt. It stands for Los Angeles Cycle Club, but Luke wasn't a cyclist or a member. It had been the property of his younger brother Jake who *had* been a cyclist until the afternoon a year ago when he'd cycled once too often on a freeway. Jake's estate had included little besides a wardrobe but, such as it was, Luke had inherited it. Since the wardrobe fitted him perfectly he was wearing it out, but things like the emblazoned sweat shirt he wore only when he was alone.

This evening he was very definitely alone—at least five miles from the nearest other human being. He was in a little two-room shack in the Mojave Desert. Not really in the heart of the desert, of course, but several miles back from the nearest paved highway. The shack belonged to a friend of his, Barton Benton, who was also a writer and who occasionally—in the relatively cooler months of the year, as now—used it for the same purpose Luke Devereaux was using it now: the pursuit of solitude in the pursuit of a story idea in the pursuit of a living.

The pursuit had gone on for three days now but Luke hadn't caught up with anything. It was better, though, than it had been in Los Angeles. He'd really been going nuts there, not having written a single page in over a month,

and with his publisher breathing down his neck—not literally but via frequent airmails from New York—for at least an *outline* of what he was going to write next, or if not that, then a *title* they could list as his forthcoming book. And how soon would he finish the book; when could they schedule it? They had a right to ask; they'd paid him a thousand dollar advance on it.

Being in love hadn't helped him concentrate, either.

Finally sheer despair—and there are few despairs sheerer than that of a writer who must write and can't—had driven him to borrow the keys to Barton Benton's shack and the use of it for as long as he needed it. Benton was under two months' contract to a studio in Hollywood and wouldn't be using the shack for at least that long.

So here Luke was and here he'd stay until he'd at least plotted and started a book. Once he'd got *going* on one, he knew, he could carry on with it back in his native habitat, where he would no longer have to deny himself the company evenings of a certain very beautiful brunette whom he might even marry some day—if he wasn't washed up as a writer.

For three days now, from about nine o'clock in the morning until dark he'd paced the floor, thinking—sober and going crazy. Evenings, because he knew that more than eight hours at a stretch might all too well drive

him literally insane, he allowed himself to relax, to read and to have a few drinks. Specifically, five drinks—a quantity which he knew would neither get him drunk nor give him a hang-over the next morning. He spaced those five drinks carefully to last the evening until eleven. Sleepy or not he'd turn in at eleven. Nothing like regularity—except that thus far it hadn't helped him at all.

At 8:14 he'd made his third drink—the one which would last him until nine o'clock—and had taken a few sips of it. He was trying to read but not succeeding very well because his mind, now that he was trying to concentrate on reading, wanted to think about writing instead. Minds are frequently that way. Probably, because he wasn't trying to do so, he was getting closer to a story idea than he'd been in over a month. He was idly wondering, what if the Martians—

There was a knock on the door.

He stared at it for a moment in blank surprise before he put down his drink and got up out of the chair. The evening was so quiet that he couldn't possibly not have heard a car, and surely no one would have *walked* here.

He opened the door. Saw no one for a moment, until he looked downward.

He said, "Oh, *no*."

It was a little green man, about two and a half feet tall.

"Hi, Mack," he said. "Is this Earth?"

"Oh, *no*," Luke Devereaux said. "It *can't* be."

"Why can't it? It must be. Look." He pointed upward. "One moon, and just about the right size and distance. Not two small moons like ours."

"Oh, *no*," Luke said again. "I'm dreaming."

"Look, Mack, get right. Is this Earth, or isn't it?"

Luke nodded.

"All right," said the little man. "We got that settled. Now, what's wrong with *you*? Is this the way you welcome strangers? Aren't you going to ask me in?"

"C-come in." Luke stepped back.

Inside, the Martian looked around frowningly. "Lousy joint," he said. "You all live like this? You the only one here?"

"Listen—" Luke said. Then he took a deep breath and let it out slowly. "Yes, I'm the only one here. Unless you're here, too, and that's what I'm wondering."

The Martian hopped lightly up on a chair and sat there with his feet dangling. "You got rocks in your head?" he asked.

Luke opened his mouth and closed it again. Then he remembered his drink and groped behind himself for it, knocked the glass over instead of getting hold of it. He swore and then remembered that that drink hadn't been a very strong one anyway. Under the circumstances he wanted a drink that *was* a drink.

He went over to the other table where the whisky was and poured himself half a tumbler full of it, straight. He drank a slug of it that almost choked him. When he was sure it was going to stay down he came back and sat, glass in hand, staring at his visitor.

"Getting an eyeful?" the Martian asked.

Luke didn't answer. He was getting a double eyeful and taking his time about it. His guest, he saw now, was humanoid but definitely not human. His general proportions were fairly human, although the torso seemed very short and both arms and legs were quite long in proportion to it. The head was quite large too, relatively. And the face—well, it had everything a face should have, but again things were out of proportion. The mouth was relatively large and so was the nose; the eyes were as tiny as they were bright. The skull was more nearly spherical than a human head, and was completely bald. Nor was there any sign of a beard; he had a strong hunch there was no body hair either. In the moonlight the skin had looked olive-green; here under artificial light it looked almost emerald-green. He took another look at the hands and saw they had six fingers apiece. That meant he probably had twelve toes, too, but he wore shoes, so there was no way of telling that. The shoes were dark-green and so were the rest of his

clothes, tight-fitting trousers and a loose blouse that looked like chamois or a very soft suede. No hat.

Luke took another pull at his drink.

"Look, Mack," said the Martian, "is that Earth hospitality? Drinking and not offering a guest a drink?"

"Sorry," Luke said. He got up and started for the bottle and another glass.

"Not that I want one," said the Martian. "I don't drink. Disgusting habit. But you might have offered."

Luke sat down again, sighed.

"Let's start over," he said. "My name is Luke Devereaux."

"A silly name. Martians don't use names. What *good* is a name?"

"To call someone. Like you called me Mack."

"We call everybody Mack—or its equivalent in whatever language we're speaking."

"All right," Luke said, "we can go into things like that later. Right now there's a more fundamental question."

He took another sip of whisky. He said, "There are three possibilities: One of them is that I'm drunk. But we can wash that one out. I may be drunk soon but I'm not, as yet, and I certainly wasn't when I first saw you. I'd had only two drinks, weak ones. And less than an inch of a third. I couldn't possibly have been drunk on that."

"Why did you bother to drink it then?"

"Irrelevant. Let's stick to the point.

There are two other possibilities: One is that I'm crazy. The other is that you're really there."

"And what makes you think those two possibilities are mutually exclusive I'm here all right. But I don't know whether you're crazy or not, and I don't care."

Luke sighed. It seemed to take a lot of sighing to get along with a Martian. Or a lot of drinking.

Suddenly he had a thought. He put down his drink, said, "Excuse me a minute," and went outside. There should be a spaceship somewhere around—if the Martian was real and was really a Martian.

There wasn't, anywhere in sight. And the moonlight was bright and the country surrounding the shack was flat; he could see a long way. He walked around the shack so he could see in all directions. Climbed up on top of his car parked behind the shack so he could see even farther. No spaceship.

He went back inside the hut, pointed an accusing finger at the Martian. "No spaceship," he said.

"Of course not."

"How'd you get here, then?"

"None of your business, but I don't mind telling you. I kwimmed."

"What do you mean, you kwimmed?"

"Like this," said the Martian. And he was gone from the chair. The word "like" had come from the chair and the word "this" came from a new direction.

Luke whirled. The Martian was

standing on a trunk in the corner of the room.

"My God," Luke said. "Teleportation."

The Martian was back in the chair again. "It's not teleportation. We don't teleport. It's kwimming."

Luke went back for his glass. There wasn't much left in it; he remedied that.

"When?"

"You mean when did I kwim here from Mars? Tonight, just a minute before I knocked on your door."

"How often have you kwimmed here before?"

"Haven't. None of us ever has before. Just learned the technique of long-distance kwimming—only short-range before. For interplanetary, you need a hikoma."

Luke pointed a finger again. "Got you. How come, then, you can talk English?"

The Martian's lip curled. It was a thick lip, well adapted to curling. "I speak all your silly languages. All of them spoken on radio programs anyway. Whatever other ones there are I can pick up in an hour or so apiece. Simple stuff. You'd never learn Martian in a thousand years."

"I'll be damned," Luke said. "No wonder you—Listen, no wonder you don't think much of us, and it's obvious you don't, if you got your ideas about us from *radio* programs."

"They stink all right. But so do you."

Luke took a firm grip on his temper. He was beginning to believe this really was a Martian and not a figment of his own imagination or insanity—and besides, it struck him suddenly—what did he have to lose?

"What's Mars like?"

"None of your business," said the Martian.

Luke took another pull at his drink. Almost choked again this time. When he could breathe easily, he made his voice very calm and reasonable. "Listen," he said, "I was rude at first. I'm sorry and I apologize. Why can't we be friends?"

"Why should we?"

"If for no other reason, because it'll make this conversation more pleasant for both of us."

"Not for me, Mack," said the Martian. "I *like* disliking people. I *like* quarreling. If you're going to go namby-pamby and pally-wally on me, I'll go find somebody else to chin with."

"Wait, don't—" Luke began, and then he realized that was just the wrong thing to say. He said, "If that's the way you feel about it, get out of here."

The Martian grinned. "That's better," he said. "Now we're getting somewhere."

"Why did you come here?"

"None of your business, Mack. But I might give you a hint on that one. Have you ever gone to a zoo and if so, why?"

"How long are you going to stay?"

The Martian cocked his head sideways. "You're a hard guy to convince, Mack. I'm not 'Information, Please.' What I do is none of your business. Or why I do it."

Somehow his glass was empty again. Luke filled it.

He glared at the Martian. If the guy *wanted* to quarrel, why not. "You little green wart," he said, "I ought to—"

"Ought to what? Do something to me? You and who else?"

Why hadn't he thought of it sooner, Luke wondered. "Me and a flash camera," he said. "I'm going to get at least a picture of you. Then when I get it developed—"

He put down his glass and went into the bedroom, got his camera. Luckily he'd just put a roll of film into it. He put a flash bulb into the reflector socket, set the focus for six feet, raised the camera.

"Here's a pose for you," said the Martian. He put his thumbs in his ears and waggled his ten other fingers, crossed his eyes and stuck out a yellow

tongue as far as he possibly could.

Luke took the shot.

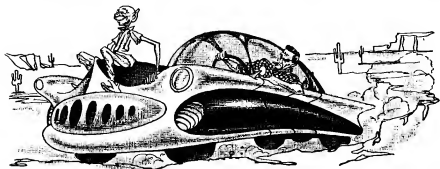
He put in another bulb and wound the film, aimed the camera. But the Martian wasn't there. His voice, from another corner of the room, said, "One's enough, Mack. Don't bore me any worse than you have."

Luke turned to face the camera that way. And the Martian was back in the chair. Luke gave up and put down the camera. Anyway, he had one shot on the film. When developed, either it would show a little green man or it wouldn't.

He picked up his glass again. Sat down with it, because the floor was becoming a bit unsteady. He took another drink to steady it.

"Listen," he said. "This is none of my business, see, but it's a minor point. You say you learned about us from radio. Radio's old hat. What's wrong with television? Haven't you got television?"

The Martian snorted. At least Luke decided the sound he made must be a Martian variety of snort. "Tele-



vision? *We* don't need television. We just kwim any place there's anything going on we want to see. And as for your— Mack, radio's bad enough. But with it we don't have to *look* at you, too."

"You mean you think *you're* worth looking at?"

"To any other Martian, I am."

Luke said, "I'll bet you drive the little girls wild. That is, if Martians are bisexual, like us."

"We're bisexual, but thank the Universe, not like you. Do you people really carry on like the characters on those radio programs do? Are *you* in love with one of your disgusting females?"

"None of your business," Luke told him.

And suddenly the Martian wasn't there any more. Luke sighed and took another drink. Thank God he'd got that picture.

But then the Martian was back in the chair. He said, "I was just in the bedroom, reading your correspondence."

"*What?*"

"Reading your correspondence, I said. What took me so long was, I'd only heard your silly language spoken, never saw it written. Took me a full minute to break down your alphabet and correlate the sounds and the letters. Imagine a language in which the sound *oo* is spelled o-u-g-h in *through*, e-w in *brew*, u-e in *true*—"

"*What business did you have reading my correspondence?*"

"You wouldn't tell me about your love-life, that's what business I had," said the Martian reasonably. "Had to find out by myself, didn't I?"

"You little green excrescence, if you do that again—"

"You'll what? Anyway, I found out. You're dopey about a female named Genevieve Tobin. You think she's as dopey about you as you are about her."

"She *is* as dopey . . . I mean, she *is* in love with— Damn it, it's none of your business."

"Anything's my business I want to make my business. But why am I wasting time if you won't coöperate? I'll go find out for myself."

"*You stay right*—"

But Luke wasn't talking to anybody or anything. The Martian was gone again.

If he'd ever really been there.

Luke found his glass was empty, poured himself another drink. He already had more than he'd consumed at one time in a lot of years, but that seemed more, rather than less, reason to keep on drinking now that he'd really got going at it. Sensible thing now was to keep it up till he knocked himself out.

And the sooner the better.

Hang-over tomorrow wouldn't matter. He had to go back to town anyway. Go to a psychiatrist or something. Or maybe get that film developed first. If no Martian on film, a psychiatrist.

If there *was* a Martian on the film, though, what then? He laughed a little, drunkenly. Probably have to go to a psychiatrist anyway, because that would *drive* him crazy.

"Hey, Mack. Still sober enough to talk?"

He opened his eyes. When had he shut them? Anyway, the Martian was back.

"Go way," he said. "Get lost. Tomorrow I'll—"

"Straighten up, Mack, I got news for you. That chick of yours was home in her apartment, all right. Lonesome as hell for you."

"Yeah? Tole you she loved me, didden I? You li'l green—"

"So lonesome for you she had someone in to console her. Tall blond guy. She called him Harry."

It partly sobered Luke for a moment Genevieve *did* have a friend named Harry, but—He said, "Harry Sunderman? Slender, snappy dresser, always wears loud sport coats—"

"Nope, this Harry wasn't that Harry, Mack. Not if he always wears sport coats. A wrist watch was all *this* one was wearing."

Luke Devereaux roared and got to his feet, lunged at the Martian. Both hands extended he grabbed at a green neck—and his hands went right through it, closed on one another.

The little green man grinned up at him. "Go ahead, Mack, throw me out. Throw me out."

Luke didn't answer. He staggered

back for his drink and gulped the rest of it down.

And that was the last thing he remembered when, in the morning, he woke and found himself lying on the cot—but atop, not under the covers, and fully dressed even to his shoes. An awful headache and an awfuller taste in his mouth.

He sat up and looked around fearfully.

No little green man.

Made his way to the bathroom and drank three glasses of water from the tap. Came back and looked at the stove, wondering if coffee would be worth the effort of making it.

Decided it wouldn't, since he could get some already made on the way back to town, only a mile or so after he got on the highway. And the sooner he got there and the sooner, thereafter, he got into town, the better. He wasn't even going to pack up. He could come back later and get his stuff. Or send someone else for it. All he wanted was *out* of here.

He hesitated about bothering to pick up the camera with the film in it—last night *must* have been hallucination; if it hadn't proved itself that last night when his hands had gone right *through* the green man, then what could prove it?

But he took the camera after all because he wanted to talk to Dick Chandler first and get Dick—who knew several of them—to recommend a psychiatrist for him to see. And if

Dick wanted to argue and tell him he might really have seen a Martian, then he'd let Dick convince himself by developing the film; Dick had his own darkroom and could do it in a few minutes.

He went out and locked the door, walked around the house to his car.

The little green man was sitting on the car's radiator.

"Hi, Mack," the Martian said. "You look like hell, but I guess you deserve to. Drinking is sure a disgusting habit."

Luke turned and went around the house, let himself in the door again. He got the bottle and poured himself a pick-up drink and drank it. He hadn't intended to, but what he'd just seen made things different. He didn't know why it made things different, but it did.

Locked the house again, went back to the car and got in. Started the engine.

Then he leaned his head out of the window. "Hey," he said, "how can I see the road with you sitting there?"

The Martian looked back at him scornfully. "What do I care whether you can see the road or not? If you have an accident, it won't hurt *me*."

Luke sighed and started the car. He drove the five miles of primitive road to the highway with his head out of the window. Hallucination or not, he couldn't see through the Martian so he had to see around him.

He hesitated whether or not to

stop at the diner for coffee, decided he might as well. Maybe the Martian would stay where he was. If he followed—well, nobody else would be able to see him anyway so what the hell.

The Martian followed. There weren't any other customers in the diner, as it happened; just a sallow-faced clerk behind the counter. Luke sat on a stool. The Martian hopped up and stood on the adjacent stool, leaned his elbows on the counter.

The counterman turned and looked—not at Luke. He groaned: "Oh, God, another one of them."

"Huh?" said Luke. "Another what?" He found himself gripping the edge of the counter so tightly that it hurt his fingers.

"Another Martian," said the clerk.

Luke took a deep breath and let it out slowly. "You mean there are *more* of them?"

The counterman looked at him in amazement. "Mister, where *were* you last night? Out on the desert and without a radio or TV? There are a *million* of them."

III.

The counterman was wrong. It was estimated later that there were approximately a billion of them. Approximately one to every three human beings—men, women and children—on Earth.

There were close to sixty million in

the United States alone and an equivalent number relative to population in every other country in the world. They'd all appeared at, as near as could be determined, the same moment everywhere. In the Pacific time zone, it had been at 8:14 P.M.—other time zones, other times. In New York it was three hours later, 11:14 P.M., with the theaters just letting out. In London it was 4:14 in the morning—but people woke up all right; the Martians woke them. In Moscow it was 7:14 A.M., in Tokyo 1:14 P.M. and in Honolulu 4:14 in the afternoon.

A great many people died that night—or morning or afternoon, depending on where they were.

Thousands died in the United States alone.

Some died of heart failure from sheer fright. A great many died of gunshot wounds because a great many other people got out guns and tried to shoot Martians; the bullets went right through the Martians without hurting them or without even slowing up the bullets and all too frequently ended up embedded in human flesh. Many died in automobile accidents. Some Martians had kwimmmed themselves into moving vehicles, usually on the front seat alongside the driver. "Faster, Mack, faster," coming from what the driver thought was an empty seat beside him was not conducive to his retaining control of the car, even if he didn't turn to look.

Casualties among the Martians were

fewer. In fact, there weren't any casualties among the Martians although people attacked—or tried to attack—them with guns, knives, axes, chairs, pitchforks, dishes, cleavers, saxophones, books, tables, wrenches, hammers, scythes, lamps, anything that came to hand. The Martians merely made insulting remarks.

Other people, of course, tried to make friends with them, even to welcome them. To these people the Martians were even more insulting.

And, to put it mildly, they played hell with everything and everybody.

Take, for example, the sad sequence of events at television station KVAK, Chicago. (Not that what happened there was basically different from what happened at all other television stations operating at the time, but we can't take *all* of them.)

Richard Bretaine, the greatest Shakespearean actor of the moment was enacting a condensed-for-television version of *Romeo and Juliet* with Helen Ferguson playing opposite him. The production had started at ten o'clock and by fourteen minutes after the hour had reached the balcony scene of Act II.

Juliet had just appeared on the balcony and Romeo below was going into his famous spiel:

"But, soft! what light through yonder window breaks?

It is the east, and Juliet is the sun!

Arise, fair sun, and kill the envious

moon,
Who is already sick and pale with
grief,
That thou her maid art far more fair
than—”

That was just how far he got when suddenly there was a little green man perched on the balcony railing, about two feet to the left of where Juliet leaned over it. Romeo faltered, but recovered and went on. After all, he had no evidence yet that anyone besides himself had seen what he was seeing. And in any case the show must go on. He went on:

“ . . . She:
“Be not her maid, since she is
envious;
Her vestal livery is but sick and
green—”

The word *green* stuck in his throat; he paused for breath and in that pause he heard a collective gasp that seemed to come from all over the studio.

And in that pause the little green man said very clearly, “Mack, that’s a lot of bull, and you know it.”

Juliet turned, screamed, and fell over the balcony railing. The Martian looked down at her calmly. “What’s wrong with *you*, Toots?” he wanted to know.

The director of the play was a brave man. He ran from beside the camera onto the set to grab the intruder and carry him off the set. He grabbed but nothing happened. The Martian grinned and gave a loud raspberry, Brooklyn style.

That was the moment at which the man in the control room suddenly recovered enough presence of mind to cut the show off the air and nobody who wasn’t in the studio at the time knows what happened after that.

But not more than a fraction of the original audience saw the show even up to the cut-off point, by half a minute or so. They had Martians of their own to worry about, right in their own living rooms.

Or take the sad case of honeymooning couples—and at any given moment a lot of couples are on honeymoons.

Take Mr. and Mrs. Bill Gruder, ages twenty-five and twenty-one respectively, who that very day had been married in Denver. Bill was a navy lieutenant and they’d been married on the first day—he’d flown from San Diego to Denver early that day—of a thirty-day leave period which he expected to enjoy more than, as it turned out, he did enjoy it.

At that they were lucky. They didn’t happen to draw a Martian right away; they had time to prepare themselves mentally for what was going to happen.

At 9:14 that evening—Mountain time—they checked into a Denver hotel. The bellboy was putting down their suitcases, and as Bill was handing him the tip they heard the first of what turned out to be a series of noises. Somebody not too far away

screamed and the scream was faintly echoed by several others, seemingly from different directions. Then the sound of six shots in rapid succession, as though someone was emptying a revolver. Running footsteps in the corridor and running footsteps that seemed to come from outside, on the sidewalk. And more shots and another and louder scream. A loud voice in the next room, too muffled for the words to be clear but it sounded like swearing. Bill frowned at the bellboy. "I thought this was a quiet hotel, a good one. It used to be."

The bellboy's face was bewildered. "It is, sir. I can't imagine what on Earth—"

He walked rapidly to the door and opened it, looked up and down the corridor. But whoever had been running there was out of sight around a turn. He said, "I'm sorry, sir. But something's happening. I better get back to the desk and— Good night and thank you." He pulled the door shut behind him.

Bill turned to his bride, took a step toward her and then stopped as there was another fusilade of shots, this time definitely from the street outside, and more running footsteps. Their room was only on the third floor and one window was a few inches open; the sounds were clear and definite.

"Just a minute, honey," Bill said. "Something is going on."

He strode to the window and threw it up the rest of the way, leaned out

and looked down. Stella joined him there. At first they saw nothing; then across the street a man ran out of a building and a child was running easily alongside him. Or was it a child? Hard to tell, at the distance. There was something strange about him. The man stopped and kicked, hard, at the child—if it *was* a child. From where they watched it looked for all the world as though the man's foot went right *through* it. Then the man ran again and the child stayed right with him. One of them was talking, but they couldn't hear the words or tell which it was, except that it didn't sound like a child's voice.

Then they were out of sight around the corner. From far off in the night, the sound of more shooting.

But nothing more to see.

They pulled their heads back in, looked at one another.

"Bill," the bride said, "something's — Could there be a revolution starting, or . . . or what?"

"Not that, not here. But—" His eyes lighted on a quarter-in-the-slot radio on the dresser and he headed for it, fumbling a quarter out of his pocket. He dropped it in and clicked the switch. The girl joined him in front of it and they stood staring at the radio, each with an arm around the other, while it warmed up. When there was a hum Bill reached with his free hand and turned the dial until there was a voice, an excited voice.

"... Martians, definitely Marti-

ans," it was saying. "But *please*, friends, do not panic. Do not be afraid, and don't try to attack them—it doesn't do any good anyway. Besides, they are harmless. I repeat, they are harmless.

"You cannot hurt them—your hand goes right through one, as through smoke. Bullets, knives—nothing touches them or hurts them. But for the same reason, they cannot hurt you. And as far as we can find out, none of them has even tried to hurt anybody. So be calm, do not panic. Yes, there's one on my desk right in front of me and it's talking to me but I'm keeping my mouth so close to the mike that—"

"Bill, that's a *gag*, or a fiction program. Like the time my parents told me about—an Orson Welles program that said Martians were here. Get another station."

Bill turned the dial.

Another voice. ". . . Don't get excited, folks. A lot of people have killed one another already trying to kill Martians and they just don't kill. So don't try. Stay calm. Yes, they're all over—we've been monitoring other radio stations and we haven't found one yet that isn't reporting them, even on the other side of the world. But they are harmless. I repeat, they are harmless, so stay calm, don't get excited. Wait, the one that's on my shoulder—he's been saying things to me that I don't care to repeat, but I'm going to put the mike up to him, and I'm going to ask him to reassure you.

I know that when he knows he's talking to *millions* of listeners, he'll . . . here I'll hold up the mike—" A different voice, a little higher pitched than the announcer's. "Thanks, Mack. I've been telling *you* to lose yourself, and now I can tell *all* these lovely people to—"

The station went dead.

Bill's arm had fallen from around Stella and hers from around him. They stared at one another. Then she said faintly, "Bill, try *another* station. That just *can't*—"

Bill Gruder reached toward the dial. But his hand never reached it.

Behind them in the room a voice said, "Hi, Mack. Hi, Toots."

They whirled. I don't have to tell you what they saw; you know by now. He was sitting on the windowsill they had so recently leaned over.

Neither of them said anything for a minute. The Martian grinned at them. "Cat got your tongues?"

Bill cleared his throat. "Is this the McCoy? Are you really a . . . a Martian?"

"My you're stupid. After what you were just listening to, you ask that."

"Why, you—"

Stella grabbed his arm as he started to take a step forward. "Bill, keep your temper. Remember what the radio said about them."

Bill subsided, but still glared. "All right," he said. "What do you want?"

"Nothing, Mack. Why should I

want anything? Anything *you* could give me, anyway."

"Then scram. We don't want company. We were just married today."

"Good. Then I do want something. I've heard some of your love-making on the radio. Now I can see the real thing."

Bill Gruder tore loose from his bride's grip on his arm and strode across the room. He reached for—and right through—the Martian on the windowsill. So violently that he himself almost went through the open window.

He went back across the room and stood glaring at the Martian. "I'll be damned," he said. "He just isn't *there*."

"That's what you think, Mack," the Martian said.

Stella came over to stand by her husband. "He's *there* all right," she said. "It's just . . . just like the radio said. You can't hurt him. But he can't hurt us, either."

"The hell he can't. He's hurting me just by sitting there."

"Let me try something, Bill." Stella took a step forward toward the Martian. "Please," she said. "Please go away and leave us alone. You . . . you don't understand."

"Don't I, Toots. I'm staying."

And he stayed.

For three and a quarter hours, sitting side by side on the edge of the bed, they tried to ignore him and outwait him. Not of course *saying* to one

another that they were trying to outwait him because they knew instinctively that would make him even more stubborn in staying. Occasionally they talked, or tried to talk, but it wasn't very intelligent conversation.

Occasionally Bill would go over and fiddle with the radio a while, hoping that by now someone would have found out some way of *dealing* with Martians, give some advice more constructive than telling people not to panic but to keep calm. Bill wasn't panicky but neither was he in a mood to keep calm. One station was pretty much like another—they all sounded like poorly organized madhouses—except for those that had gone off the air completely. He learned a few facts, but they weren't helpful. He learned that there were a lot of Martians and that they were being reported all over the world, not just in Denver. It was far from being the local invasion he'd assumed at first.

And nobody had discovered yet anything to do about it except to keep calm, don't get excited, they can't hurt you—and you can't hurt them so don't try. Make friends with them if you can.

But no report that anyone *had* made friends with them or with any one of them.

Bill sighed and sat down on the bed again, forgot he was ignoring the Martian and glowered at him.

The Martian grinned at Bill. And said nothing, which was more irritating

than anything he could possibly have said.

At half past midnight Bill's impatience exploded: "He can't see in the dark and if I pull down the shades all the way before I turn off the light—"

Stella's voice sounded worried. "Bill, how do we *know* he can't see in the dark?"

Bill hesitated, but only a moment, then he slammed down the window that was open and the shade behind it, taking angry pleasure in reaching right through the Martian to perform both operations. He pulled down the other shade and turned out the light.

They'd didn't know then—as every-

body came to know within a day or two—that Martians could see in the dark. Some kind of X-ray vision—or more likely some special ability, like kwimming—enabled them to see even through walls; and very good vision it was too, for they could read the fine print on folded documents in closed drawers or in locked safes. They could read a book without opening it.

And as soon as this was learned people began to realize that they could never be absolutely *sure* of privacy at any time. If no Martian was in sight, there might be one in the next room or outside the house, watching them through the wall.



IV.

Try to make friends with them, one radio announcer kept saying.

Try to make friends with them.

A great many people, men and women of good will, tried that first night. Some of them kept on trying for quite a while. A few—saints, they must have been—never did quit trying.

One difficulty was that the Martians moved *around* so. No single Martian ever stayed long—rarely as long as a single full day—in one place or in contact with one person, one family or one group. It just might have been possible—I'm not saying that it would have been, only that it *might* have been—for an extremely patient human being to have achieved friendly footing with a Martian, have gained a Martian's confidence, if that human being had had the opportunity of protracted contact with a given Martian. But Martians weren't given, in that sense. The next moment, the next hour, the next day, he'd be starting from scratch with a different Martian.

In fact, a man of good will who tried to be friendly, it was soon learned, was likely to be in contact with a given Martian for shorter periods than a man who tried to shout them down, who swore at them and blew his top—or even tried to murder them. Nice people bored them. Conflict was their element; they loved it.

Casualties, in all countries, were highest among the military that night—or day, in the Orient.

At all encampments and other military installations sentries used their guns. Some challenged and then fired; most of them just fired, and kept on firing until their guns were empty, while the Martians jeered at them.

Soldiers who didn't have guns ran to get them, those who had guns used them. Officers used their side arms.

Carnage was terrible, among the soldiers. The Martians got a big bang out of it.

Amid the shooting and after it was over—whether because ammunition ran out or because the firers of guns finally realized that they were not harming the Martians in the slightest—officers in charge of really *top secret* military installations went quietly mad.

The Martians were interested in military secrets no more than they were interested in anything else, but still they were interested enough to examine them. Secret armed-rocket launching sites, secret A- and H-bomb hoards, secret files and secret plans, all interested them but failed to impress them.

"Peanut stuff, Mack," one of them sitting on the desk of the two-star general in charge of Base A, our *really* top military secret—until then—told the general. "Peanut stuff. You couldn't lick a tribe of Eskimos with everything you got, if the Eskimos knew how to vahr."

"What is *vahring*?" roared the general.

"None of your business, Mack," the Martian said. He laughed.

The general laughed too, and kept on laughing until some of his aides led him away quietly.

The Pentagon was a madhouse and so was the Kremlin, although neither building drew more than its share of Martians, either at the time of their arrival or thereafter.

Nor did they pay undue attention to the tremendous installations in Arizona where were being built the space station and the rockets which were, we hoped, to put it up there in an orbit around the Earth.

They were no more interested in the space station project than in the love life of the humblest street sweeper—and no less. They were amused by and sneered at both equally.

Some people took them in their stride, or tried to. Especially people who, like the honeymooning Gruders whom we have just met, heard about them over the radio or otherwise before they actually saw one. People who were prepared, or thought they were.

Like the gang that played poker every Thursday night at George Keller's place on the beach north of Laguna. George was retired; he lived there the year round. Most of the others lived in Laguna, held jobs or owned shops there.

That particular Thursday evening there were six of them, counting George. Just the right number for a good game. And they *played* a good game, all of them, with stakes just high enough to make it exciting but not high enough to hurt the losers seriously. Poker was more nearly a religion with them than it was a vice. Thursday nights from around nine until around two o'clock in the morning were highlights in their lives, something to look forward to throughout the duller days of the week.

Comfortable in shirt sleeves and with their neckties loose or taken off they were seated around the big table in the living room, ready to start play by a few minutes after nine o'clock. They'd all bought chips and they all had tinkling glasses or opened beer cans in front of them. George dealt cards around to see who caught a jack for first deal; it went to Gerry Dix, head teller at the Laguna Bank.

Dix dealt and won the first hand himself on three tens. Not a big pot, though; there wasn't much competition.

Next man around, Bob Trimble, proprietor of the local stationery store, picked up the deck and shuffled it. "Ante up, boys," he said. "This one'll be better."

Across the room the radio played music, softly. George Keller liked background music and left it on most of the time.

Trimble dealt. George picked up his cards and saw two small pairs,

sevens and treys. Openers, but too weak a hand to open on under the gun and probably get bumped. If someone else opened, he could stay and draw a card. "Pass," he said.

Two more passes and then it was opened for a red chip. Trimble stayed, but without raising, and George did the same. The two men who'd passed between George and the opener passed again; that left three of them in the pot.

Trimble picked up the deck again. "Cards, George?"

"Just a second," George said. He'd turned his head and was listening to the radio. It wasn't playing music now and he realized, in retrospect, that it hadn't been for a minute or two. Somebody yammering—and much too excitedly for it to be a commercial; the voice sounded almost hysterical. Besides, it was around a quarter after nine and if he had the program he'd thought he had, it was the Starlight Hour, which was interrupted only once, at the half hour, by a commercial break.

Could this possibly be an emergency announcement—warning of an impending air raid or something of the sort?

"Just a second," he said again, and put down his hand. He went over to the radio and turned up the volume.

". . . Little green men, dozens of them, all over the station. They say they're Martians. Being reported all over. But don't get excited—they can't

hurt you. Perfectly harmless because they're impal . . . im . . . you can't *touch* them; your hand or anything you throw at them goes right through them like smoke, and they can't hurt you, for the same reason. So don't—"

There was more. They listened, all of them, for a minute or two. Then Gerry Dix said, "George, you holding up the game just to listen to a science-fiction program?"

George said, "Is it? What if—?"

There was sudden silence from the radio. George turned back toward it and fiddled with the dials. "What luck," he said. "A tube must have blown out or something. Can't even get a hum out of it."

"Maybe Martians did it," Trimble said, sarcastically. "Come on back to the game, George. Come on back before the cards get cold. I'm going to win this one, like Gerry won his deal."

George hesitated, then looked toward Walt Grainger, the paint store owner. All five of the men from Laguna had come out to the beach house in one car, Walt's.

"Walt," George said, "you got a radio in your car, haven't you?"

Grainger shook his head.

George said, "And no telephone because the phone company won't run wires and poles way down—Oh, forget it."

"If you're *really* worried, George," Walt said, "we can take a quick run into town—all of us, for that matter; we can get six in the car—and be back

here in half an hour. It won't lose us too much time."

"Unless we run into a pack of Martians," Trimble said scoffingly.

"Nuts," Gerry Dix said. "Let the Martians come to us, if they want to see us. This is our *poker* night. Let's play cards."

George Keller sighed. "O.K.," he said. He went back to the table and sat down, picked up his hand to remind himself what he had. Oh yes, sevens and treys—and a chance to draw one card for a full without having had to stand a raise on the opening round.

"Cards?" Trimble asked, picking up the deck again.

"One for me," George said, discarding his fifth card.

But Trimble never dealt it.

Across the table, Walt Grainger let out a howl in such a tone that they all froze a second, then stared at him, then turned to stare at whatever *he* was staring at.

There were two Martians. One was sitting on top of a floor lamp, the other standing on the radio cabinet.

George Keller recovered first, maybe because he was the one of them who'd come nearest to giving credence to the radio report, maybe because he was the host and felt responsible.

"H-hello," he said, a bit weakly.

"Hi, Mack," said the Martian on the lamp. "Listen, you better throw that hand of yours away after the

draw, because you won't win this pot."

"Huh?"

"I'm telling you. Sevens and threes you got, and you're going to have a full because the top card on the deck's a seven."

The other Martian said, "That's the McCoy, Mack. And you'd lose your shirt on that full because *this* slob"—he pointed to Barry Wainright, who had opened the pot—"opened on three jacks and a jack's the second card from the top of the deck. He'll have four of them."

"Play it out and see," said the first Martian.

Barry Wainright stood up and slammed his cards down on the table, three jacks among them. He reached over and took the deck from Trimble, faced the top two cards. A seven and a jack. As stated.

"Did you think we were kidding you, Mack?" asked the first Martian.

"Why, you—" The muscles of Barry's shoulders bunched under his shirt as he started for the Martian.

"Don't!" George Keller said. "Remember what the radio said. You can't throw them out if you can't touch them."

"That's right, Mack," said the other Martian. "You'll just make a monkey out of yourself. Why don't you get back to the game and we'll give you some pointers. We'll help all of you, *every hand*."

Trimble stood up. "You take that one, Barry," he said grimly. "I'll take

this one. Maybe we can't throw them out, but it won't hurt to *try*."

It didn't hurt to try. But it didn't help, either.

V.

The Martians stayed, and no one knew or could even guess how long they might stay or, for that matter, whether or not they were here permanently. It was none of our business.

And we never learned much, if any, more about them than was obvious within a day or so after their arrival.

Physically, they were pretty much alike. Although not identical there was on the average considerably less physical variation from Martian to Martian than there is from human being to human being, even when the human beings are members of the same sex and the same race. And it was obvious that there *were* no races among the Martians, at least among those who visited us.

The only important difference among them was a difference in size; the largest among them was as tall as three feet and the smallest as short as two feet three inches.

There were several schools of thought—among human beings who thought about it—as to the explanation of this difference in height among them. Some people thought they were all adult males—which they appeared to be if judged by human standards from their faces—and that variation in height among them was somewhat

greater than it is among human beings. Other people thought the difference in height indicated a difference in age; that probably they *were* all adult males but that, with them, growth did not cease with adulthood and that the short ones were relatively young and the tall ones relatively old.

We never learned what they ate or drank or even whether they ate or drank. They couldn't have eaten Earth food, of course; they could no more pick up or handle a solid object here than we could pick up, handle—or manhandle—one of them. The consensus was that—since their *kwimming* seemed to be an instantaneous process—a Martian would kwim to Mars and back again any time he felt the need to eat or drink. Or to sleep, if Martians slept; no one ever saw a Martian sleeping on Earth.

No, we never learned much about them.

We didn't even know whether they were really *here*, in person. Many people, especially scientists, insisted that a life form that is non-corporeal, without solidity, cannot possibly exist. And that, therefore, what we saw weren't really the Martians themselves but *projections* of them. That the Martians had—had to have—bodies as solid as ours, back on Mars and that those bodies were there—possibly in a trance state. That kwimming was really the ability to project an "astral body" that was visible but not corporeal.

There were difficulties to that theory, obviously. How could a non-corporeal projection talk? Sound is the physical movement or vibration of air—or other—molecules and how could a mere *projection* that wasn't really there create a sound?

And they certainly created sounds. Actual sounds, not just in the mind of the listener; the fact that the sounds they made could be recorded on wax or tape was proof of that. They could really talk and they could also—but seldom did—knock on doors. The Martian who had knocked on Luke Devereaux's door on what came to be called the Coming night had been an exception, in that particular respect. Most of them had kwimmed their way without knocking right into living rooms, bedrooms, television stations, night clubs, theaters, taverns—there must have been some wonderful scenes in taverns that night—barracks, igloos, jails, tents, everywhere.

They also showed clearly on photographs, as Luke Devereaux would have found out had he ever bothered to have that roll of film developed.

Mentally, they were even more alike than they were physically although again there were minor variations—some of them were a little nastier than others.

They all insisted that they had no names, or even numbers, and that names were ridiculous. None of them ever addressed a human being by name. In the United States they called

every man *Mack* and every woman *Toots*; in other countries and other languages, equivalents of those names.

In one field at least they showed tremendous aptitude—linguistics. Luke Devereaux's Martian hadn't been bragging when he said he could learn a language in an hour or so. The Martians who appeared among various primitive peoples whose tongues had never been broadcast by radio arrived without knowing a word of the language; they were speaking it adequately within an hour, fluently within a few hours.

And whatever language they spoke, they spoke it idiomatically, almost slangily, with none of the stiffness and pedantry with which human beings usually speak a language that isn't native to them.

Many words in their vocabularies, incidentally, were obviously *not* learned from radio broadcasts. But that isn't difficult to account for; within an hour of their arrival they, or many of them, certainly had the benefit of a liberal education in profanity.

BUSINESS AS USUAL was our slogan within a week.

And in some businesses it worked, more or less. You can get used to driving a truck with a Martian sneering at the way you drive—or if you can't get *used* to it, at least you can *do* it. Or you can sell groceries across a counter with a Martian sitting—weightlessly, if immovably—on top of

your head heckling you and your customer. Things like that are wearing on the nerves but at least they can be done.

Other businesses did not fare so well.

The entertainment business was the first and hardest hit. Although filmed television shows were not interrupted that first night—except where technicians at the broadcasting stations panicked at the sight of Martians—every live television broadcast was off the air within minutes.

With the BUSINESS AS USUAL movement, live broadcasts were tried again but were speedily found impossible. The Martians *loved* live broadcasts; loved to heckle them, that is. A would-be dramatic show would frequently have more Martians than people on the set. Sometimes mocking the acting, sometimes merely making rude or even obscene remarks into the

microphone, sometimes—if all else failed, if the actors persisted and at least pretended to ignore them—banding together in sufficient number to set up a howl that would simply drown out the voices of the actors completely.

Panel shows, they *really* loved. Especially panel discussions—and several were attempted—of the problem of the Martians themselves. What they did to those shows was something to see and hear.

All attempts at live broadcasting were out, completely; that was obvious by the end of the first week.

The filmed shows they didn't bother. The broadcasters made a noble effort to continue business as usual using only canned entertainment and for a while it worked. But since no *new* shows could be filmed and no *new* movies could be made—for the same reason that no live broadcasts could



be used—it was sad but true that the same films would have to be shown over and over again as long as the Martians stayed. Forever, if the Martians stayed forever.

Nevertheless television gained a sudden advantage over all other forms of entertainment—except reading—in that it suddenly had access to *new* movies. Ones, that is, that had already been completed before the Martians came but which otherwise would not have been available to television stations for years.

This came about because the showing of movies in a theater was completely impossible and the movie studios had no choice but to cut their losses by letting television have all the films available. Theaters were *out*. Large gatherings of people anywhere or for any purpose were out unless they were absolutely essential; legislation was quickly enacted in most cities or states to forbid them, but by the time the bills were passed, they were no longer necessary. People had already learned the score.

It was a matter of simple mathematics. With an average of one Martian to three people any group of a hundred people, say, would have from twenty to forty Martians to heckle them—and even *one* Martian could go far toward spoiling a show, wrecking a meeting or making life unpleasant for a number of people.

Simple mathematics. If you were alone, you had two chances in three of

not having a Martian around at any given time.

If you were of a couple, you had one chance in three of being Martian-free. (But you had to remember that one might pop in at any moment.)

In a large group you didn't have a chance.

Radio survived and would continue to survive for a while on the same basis as television; that is, it could continue to replay old programs that had been waxed or taped—and most of them had. But it fell even farther behind television, as a medium of entertainment, than it had been before, because of the sudden boost television received through the acquisition of a great number of recent and current movies.

Radio could only rebroadcast things it had always used and sometimes—not invariably—run in newcasts and announcements. The Martians would invariably break up a try at a full-scale show—which would involve enough people to ensure at least one Martian being around. A one-man deal, commentator, announcer or speaker, had a chance. He might get through his program or he might not; if he didn't, the station would cut in and play records instead.

Ah, yes, records. In the absence of live entertainment—no band or orchestra even bothered to assemble after a day or so—people had to listen to canned music in their own homes and the sale of records boomed. Not

new records, of course—for reasons that should be obvious by now—but the companies could and did, keep on pressing records they'd already made and they sold like hotcakes.

Yes, there was still entertainment available to people at home—when they were free to enjoy it. And perhaps I should not have implied that all of the entertainment business was hard hit. Record sales boomed; television did well, and while the new movies stayed new, would continue to do well; radio got by.

But owners of theaters, night clubs, concert halls, movie producers, all faced bankruptcy.

And actors, musicians, directors—all those whose income had come from live entertainment or from the making of new films and records—faced starvation. So did playwrights and scriptwriters, unless they could turn their talents toward fiction writing.

The publishing trade flourished like the green—ugh, that word again—bay tree. People quickly found that the best bet to beat a Martian was to put stopples in their ears and curl up with a book. You couldn't listen to records or enjoy television when one was around but with your ears stopped up you could read a book or magazine in a room full of Martians. They could have interrupted a person reading by holding their hands or heads between his eyes and the book, but for some reason they never did. Maybe that would have been too childish or too

nasty even for a Martian.

In the field of crime, strange things were happening.

Crimes of violence and passion were up, way up. People's nerves were wearing thin, and many of them, since it did no good to attack Martians, quarreled with, fought with and sometimes even murdered one another. Street fights and domestic fights were a dime a dozen.

Crimes of stealth were down, way down.

The Martians *tattled* so. They loved to tattle where it would make trouble.

Take the sad case of Alf Dilling; let him tell you in his own words what happened to him in Soho about a week after Coming night. Take it, Alf.

"Well, Guv'nor, 'ere Hi am fresh from a moon in a flowery, and Hi'm coming out of an oozer after a pig's ear that took my last smash. Blimey, Hi'm on the rib. So when I gets a decko at this connaught ranger taking a pen'orth of chalk down the frog looking like 'e'd 'ave a dummy full of bees and honey, 'e looks ripe for a buzz. Hi takes a decko around. Hi sees a greenie on a jam-pot near but 'ow'd Hi know 'e was a grass? Hi *got* to speel or there's no weeping willow for my Uncle Ned. So I closes up and uses my fork to blag—"

Wait.

Maybe you'd better let me tell it, Alf.

Here was Alf fresh from a month in jail, coming out of a pub after just having spent his last change for a beer. So when he saw a prosperous-looking man walking down the street, he decided to pick his pocket. Nobody in sight looked like a policeman or detective. True, there was a Martian sitting on top of a car nearby but he had no reason to believe the Martian would tell on him, even if he noticed. And Alf was broke; he had to take a chance or he wouldn't be able to afford a place to sleep that night. So he closed up on the man and picked his pocket.

Suddenly there was the Martian on the sidewalk beside him pointing at the wallet and chanting delightedly, "Yah, yah, yah, yah, look 'oo blagged a dummy."

"Nark it," Alf growled, shoving the wallet quickly out of sight and turning to slouch away.

But the Martian didn't nark it. He kept pace with poor Alf, and kept up his delighted chanting. And with a quick look over his shoulder, Alf saw that his victim had turned, was feeling his hip pocket and starting for Alf.

Alf ran—around the corner and into the blue-clad arms of a bobby.

It wasn't that the Martians were against crime or criminals, except in the sense that they were against everything and everybody. But they loved to tattle and catching a criminal in the act of crime gave them a beautiful opportunity to make trouble.

They disliked and heckled the police, too. In court they would drive judges, lawyers and juries to such distraction that there were more mistrials than completed ones.

In one way or another they caused as much trouble for the forces of law and order as they caused for the criminals. The honest man suffered as much as the dishonest, although possibly they suffered in different ways.

VI.

The Iron Curtain quivered like an aspen leaf in an earthquake.

The leaders of the People found themselves faced with an internal opposition that they couldn't purge, could not even intimidate.

Not only could they not blame the Martians on the Capitalist warmongers but they soon found out that the Martians were *worse* than Capitalist warmongers.

Not only were they not Marxists; they would admit to no political philosophy whatsoever and sneered at all of them. They sneered equally at all our governments and forms of government. (Yes, they themselves had the perfect form of government, but they never told us what it was.)

All they wanted was to know everything that went on, and to be as annoying and irritating as they possibly could.

Behind the trembling curtain, they

succeeded — to the People's delight.

How could one tell the Big Lie, or even a little one, with a third of a billion Martians gleefully ready to punch holes in it? They loved propaganda.

And they *tattled* so. Many citizens were summarily tried and executed in Communist countries the first few months of the Martians' stay. Peasants, factory superintendents, generals, Politburo members. It wasn't safe to do *anything*, with Martians around, and there were always Martians around.

But after a while that phase of things eased up. It had to. You can't kill everybody. Not even everybody outside the Kremlin, if for no other reason than that then the Capitalist warmongers would march in and take over. You can't even send everybody to Siberia; Siberia would hold them all right, but it wouldn't support them.

Concessions had to be made; minor variations in opinion had to be allowed. Minor deviations from the party line had to be ignored if not winked at. Those things were bad enough.

But what was worse was the speeches, facts and figures *had to be reasonably honest*; not because the Martians wanted them to be but because they *loved* it when they weren't.

The Capitalist warmongers were having their troubles, too. Who wasn't?

Take Ralph Blaise Wendell. Born at the turn of the century and now

sixty-four years old. Tall but becoming a little stooped, slender, with thinning gray hair and tired gray eyes. He had had the misfortune—although it had not seemed a misfortune at the time—to have been elected President of the United States in 1960. Now—and until the November elections brought surcease—he was president of a country that contained a hundred and eighty million people. *And* about sixty million Martians. (No one had ever counted them or ever would but the one-to-three-human-beings ratio seemed to hold at least approximately everywhere.)

Now—an evening in mid-June, three and a half months after the coming of the Martians—he sat alone in his big office brooding. Yes, alone; there wasn't a Martian present.

Not that it was too unusual not to have a Martian in his office; it happened frequently, although seldom when press conferences or affairs of state necessitated the presence of three or more people. Alone or with only his secretary in the office he had as good a chance of not being bothered as anyone else. The Martians, he thought, haunted presidents and dictators no more than they haunted file clerks and baby sitters.

They were no respecters of persons. They were no respecters of *anything*.

Now, at least for the moment, he was alone. The day's work through, but loath to move—or too tired. Tired with the special weariness that

comes from the combination of great responsibility and a feeling of inadequacy. Tired with defeat.

He thought back bitterly over the three and a half months, of the mess things had become. Of the mess they still were in.

A depression that made the so-called great depression of the '30s look like prosperity.

It had started, of course, with the sudden loss of employment of millions of people all at once. Almost everyone connected with entertainment—not only the entertainers, but stage hands, ticket takers, scrub-women. Everyone connected in any capacity with professional sports. Everyone connected with the movie industry in any capacity whatsoever. Everyone connected with radio and television, except a few technicians to keep the transmitters running and to handle the already-filmed or already-taped replays. And a few, a very few, announcers and commentators. Every concert orchestra and dance band. Shades of Petrillo! Nobody had guessed *how* many millions of people had made their living in one way or another from entertainment or from sports. Not until they all lost their jobs at once.

And all the money that had been invested in entertainment!

That's what had set off the stock market crash. Thousands of investors wiped out overnight because of the fall to almost zero of entertainment

stocks. Others selling other stocks frantically, either foreseeing things to come or just wanting cash instead of stock in case of what might happen.

And other, if more gradually realized, repercussions.

Automobile production down eighty-seven per cent over the same month a year ago. People were staying home. Where was there to go? Sure, some of them had to drive to work and back but just for that the old jalopy was plenty good. Why buy a new one, especially now in a depression?

More millions out of work in the auto industry.

And in the oil fields and refineries. More than half of the gasoline stations closed.

Fewer autos and less driving. Less rubber. Less steel. More unemployment.

Less construction because people had less money and they weren't building.

More unemployment.

And the jails full and overflowing; although most professional crime seemed to have stopped, criminals had managed to jam the jails before they became convinced that their business was no longer practical. And, jamming the jails, they left no room for current offenders. What can you do to a hungry man who steals out of desperation, despite the double risk of being seen by a Martian? He's broke so you can't fine him, and if you haven't room for him in a jail, what do you do? (Yes,

we were organizing a relief system, but it was far from adequate as yet; the thing had happened so *suddenly*.) And what could the police do with all the people involved in assaults and fights?

And the insane asylums were in worse plight.

He dropped his head into his hands and groaned aloud, feeling very old and very futile.

From a corner of the room came an echoing, mocking groan. "Hi, Mack," said a voice, "working overtime? Want help?" And a laugh.

Not *all* business was bad.

With the death rate still high—the increase was in deaths due to suicide, violence and apoplexy—the morticians were doing well by themselves. And this despite the increasing trend toward simple burial or cremation without anything that could really be called a funeral. It was all too easy for Martians to make a farce out of a funeral and they especially loved to kibitz a minister's eulogy if it strayed from strict facts about the virtues of the deceased or glossed over any of his vices. Whether from observation, from eavesdropping, or from reading hidden letters or records, the Martians were always able to pounce gleefully on any deviation from truth in a funeral oration. It wasn't safe to have one for anyone who had led less than a perfectly blameless life. It wasn't really safe even when the loved one

was thought to have been blameless; often the bereaved ones learned things about him that shocked them silly.

The drug business boomed, due to the sale of aspirin tablets, sedatives and ear stopples.

Psychiatrists went crazy trying to keep other people from going crazy.

But the biggest boom of all was in the industry in which you'd expect the biggest boom to be, the liquor industry. Since time immemorial alcohol has been man's favorite gate of escape from the routine vicissitudes of everyday life. Now man's everyday life had little green vicissitudes a thousand times worse than the routine ones had been. He *really* had something to escape from.

Sensibly enough, most of the increased drinking was done in homes. But taverns were still open, and they were crowded in the afternoon and jammed in the evening. In most of them the backbar mirrors were broken as a result of people throwing glasses, bottles, ash trays or what have you at Martians, and mirrors weren't replaced because if they were they'd be broken again the same way.

Sure, Martians frequented taverns, even though they didn't drink. But they *bothered* you less in taverns. Juke boxes were kept going at top volume. Those who talked had to yell in their neighbor's ears. All the Martians could do was to add to the din and the din was already such that addition was practically superfluous.

If you were a solitary drinker—and more and more people were becoming solitary drinkers—you had a better chance of being alone in a tavern than anywhere else. At home, one chance in about three there'd be a Martian with you. In a tavern there'd probably be a dozen of them but, if you stood at the bar with your eyes closed, you couldn't see them, and certainly you couldn't hear them.

Take Luke Devereaux, the science-fiction writer. (We took him once before, remember?) He was well on his way to becoming a solitary drinker by now. For two good reasons *besides* the Martians.

One reason was that he still—after how many months now?—hadn't been able to start that novel. Didn't have either a glimmer of an idea or an opening sentence. He was living and drinking—the words had become nearly synonymous to him—by hocking his possessions, one at a time. Most of them were already gone. Not that the situation was desperate yet, *if* he could get an idea; with even a few thousand words and a rough synopsis he could get a further advance from his publishers, enough to carry him through the couple of months it would take him to finish the book.

The other reason—although it was now, with time, a diminishing one—was Genevieve's betrayal of him to the man who wore the wrist watch. The Martian had told him the truth

that night; he'd found that out. (That was the really horrible thing about the Martians' habit of tattling about everything and everybody; they always told the truth. If they'd only *lie* once in a while, so you could disbelieve them when they told you something you didn't want to believe—)

But we were taking Luke Devereaux. Let's take him at seven o'clock of a Wednesday evening in July. He's in a tavern on Wilshire Boulevard, within easy walking distance of his rooming house. (He'd given up his bachelor apartment to save money.) The tavern was called "The Yellow Lantern." It used to be called "The Green Lantern," but the name had been changed several months ago. (Nobody, but nobody, liked green any more. *Green* was a swear word. Anybody who owned anything green, dyed it or repainted it; threw it away or burned it if he couldn't change its color. Some people even plowed up their lawns and gardens. Several countries, including and especially Eire, had changed their flags. People named Green or Greene changed their names.)

In The Yellow Lantern at seven, Luke was still sober. He'd really tried hard that day, had paced his room or sat in front of his typewriter from ten in the morning until six o'clock. He'd eaten after that, come here, and had his first drink.

He ordered his second, and got it. He stared at it moodily to avoid having to watch several Martians on the

backbar, doing something—and he didn't *want* to see what—and one that was running and then sliding the length of the bar as though it were an ice slide, right through people's drinks. The juke box blared so loudly that he couldn't hear himself think, but that was all right; he didn't want to hear himself think anyway. It would have been a miserable thing to listen to.

Somebody jostled him from behind trying to get through to the bar. Early as it was, there were already twice as many people in the tavern as there were bar stools and booth seats. Since the drink in his hand was a fresh one, good for a while yet, he yielded his place. Stood a few feet back from the bar, sipping at it.

Over the din, a voice yelled in his ear, "Hey, don't I know you?" Luke turned his head. The man who had yelled was a stranger to him, as far as he could remember. Tallish and slender but with a round face, topped by iron-gray hair in a crew cut.

"I don't know," Luke yelled back. "Name's Luke Devereaux."

"Then you're not— Hey, you mean Devereaux the writer? Then you're not who I thought, but I *do* know you. Know of you. I've read your stuff—and sold it."

Luke had the hesitation any writer feels when someone tells him he's read his stuff. He hasn't said he *liked* it, so you can't thank him; maybe he didn't like it. But in this case the

second part of the statement gave Luke an out. "Sold it?" he asked. "You run a bookstore?"

"Newsstand. Sell pocket-book reprints. My name's Dale Fowler. Can I get you a drink?"

Luke held up his glass so Fowler could see it was almost full. "Later, maybe."

"Want to step outside?"

It wasn't an invitation to fight, as, in happier times, that sentence had been when spoken in a tavern. It had a new meaning that had developed because of the deafening din that prevailed in post-Martian taverns. If two people wanted to talk for a minute or a few minutes without having to scream at one another, they'd step outside the front or back door onto the sidewalk or into the alley, and a few paces away, taking their drinks with them. If no Martian followed them or appeared, they could talk undisturbed. If a Martian bothered them, they could go back inside to the maddening noise, and they'd have lost nothing. Bartenders understood and didn't mind people going outside with their glasses; besides, bartenders were usually too busy to notice.

Luke nodded and they stepped out onto the sidewalk into the relative quiet of Wilshire Boulevard traffic.

Fowler said, "Luck," and they touched glasses and each drank some of his drink, and then Fowler said, "You write good stuff, Devereaux."



That book of yours, 'The Dust Between the Stars,' was a honey. So was that humorous one, 'The Count of Geiger'."

Now Luke could say "Thanks." He did.

"But I didn't get you out here just to tell you that. You already know it. I wanted to ask you: Are you figuring on keeping on writing science fiction?"

"Huh?" said Luke. "Sure—that is, if I can get going again. I'm in a slump."

"Ever written anything besides science fiction?"

"Back when, yes. Not recently. Westerns."

"Good," Fowler said. "Then you're going to be O.K. And you won't mind what I'm going to tell you. It's this: Science fiction is dead."

"Huh?"

"Well, dying, then. Science fiction's on its way out, and fast. Selling pocket books at a newstand you spot trends quickly. Even faster than bookstores because your volume turnover is more than theirs. And way ahead of publishers, although even they are beginning to know it by now and to change their schedules."

"But why?" Luke asked. "I don't get it."

As though on cue there was a Martian sitting on Fowler's shoulder. Being weightless, he hadn't felt it kwim there, so he jumped perceptibly when it shrilled a "Hi, Mack," in his left ear. A little of his drink slopped out onto his suit coat.

But he recovered and jerked the thumb of his free hand toward the Martian. "There's why," he said. "People aren't reading science fiction because they've got science fiction. More of it than they want. Day and night."

"I'll be damned," said Luke.

Fowler said, "Extraterrestrial stuff is just what people want to escape from, now. They're picking up every mystery or suspense story and every Western I can get hold of and put on my racks. Science fiction sits there, even though I've already carefully weeded out every book of it that even *mentions* Mars, and thrown them away. Bet you anything you want that a month from now no publisher will be bringing out a single science fiction book—they'll even cancel publication of ones they've scheduled or already have in type but not printed. Even if they're printed and bound, it won't be worth the postage to ship them out. And do you know what that means?"

"What?" Luke asked. He was feeling a little dazed.

"It means there's going to be a big and sudden demand for Westerns, mysteries, suspense, costume stuff, everything else. Going to be a vacuum where science fiction was."

"I'll be damned," said Luke.

"You said that," said the Martian. "People are stupid."

"We are," Luke said, thinking of himself. He had been stupid not to have realized that, not to have foreseen it. Why, even in his own case—He'd been an avid reader of science fiction all his life, until the last few months; recently when he'd tried to read some of it to put himself in the mood for thinking out a novel of his own, he'd had to *force* himself—What had blinded

him to the fact that other people would be starting to feel the same way? Why, that even explained his slump, or the greater part of it.

And he *could* write Westerns.

He stuck out his hand to Fowler, shook Fowler's hand enthusiastically. "Thanks," he said. "Excuse me; I've got to go. But thanks to hell and back."

"That where you're going?" called the Martian, as he strode off.

It wasn't. He went home. Going up the stairs to his room he discovered he still had a half-full glass of whisky and soda in his hand; fast as he'd walked he'd carried it carefully all the way, without realizing he had it.

He laughed at himself and drank it off at a swallow when he stopped on the landing. Only his second and, especially on top of a fair dinner, it wouldn't affect him.

In his room he whipped the cover off his typewriter and sat at the desk, got out yellow paper, carbon paper and white paper in sequence and put them in the typewriter. He usually wrote rough drafts and then final copy on his science fiction; on a Western he wouldn't have to. He could knock out a Western with his left hand, in a month.

Title? You didn't need a title for a Western; just something like "Guns Across the Border" or "Guns Across the Pecos," and then you used the border or the Pecos country for a

setting—only probably both of those titles had been used. He reached for his atlas and turned to Arizona; a good solid Western state. He looked for names of rivers. The New River. "Guns Across the New" would be silly; so would "Guns Across the Trout." Then he found what he wanted, the Gila River. "Guns Across the Gila." Good. He centered it, in caps, near the top of the page. Under it typed "by Luke Devers"; that was the name he'd used on his old Westerns—figuring "Devereaux" might be a little fancy for the horse opera trade—and he might as well use it again on this.

Plot? You didn't need a new plot for a Western, just a variation on one of the standard ones, and you could work out the variations as you went along. Let's see, he could use the basic plot he'd used in "Thunder on the Range"; two rival ranches—in this case, one on each side of the Gila River, which would make the title fit beautifully—a big one run by the bad guy and a small one run by the good guy. Same gun-war, same ending—it would *have* to be the same ending, the right side had to win.

The variation? Tell it from the point of view of a gunslinger hired by the villain. But the gunslinger's a right guy at heart—starts off bad but ends up a hero—changes sides when he finds out his boss is a rustler and a crook and saves the day for the right side. Start, maybe, with the

gunslinger riding toward the big ranch, being stopped by one of the guards who doesn't know the big boss has hired a new hand.

Luke's fingers poised over the keyboard, hit the tab key for a paragraph indention, then started typing. "As Don Marston drew nearer the figure that waited for him on the trail, the figure resolved itself into a grim-eyed hombre whose hands held a stubby carbine crosswise on the pommel of his—"

Back and forth the typewriter's carriage, faster and faster.

And suddenly a Martian, one of the smaller ones, was sitting on the carriage, riding it. "Whoopie!" he yelled. "Hi-yo, Silver! *Away!* Faster, Mack."

Luke's chair went over backwards as he stood up, tearing at his hair.

He ran, not walked, back to The Yellow Lantern.

VII.

Not everyone believed that they were really Martians. Some scientists, some laymen, and almost all crackpots had other theories about them.

They *said* they were Martians, sure, and no one had ever caught them in a lie or managed to disprove any statement they ever made either about our affairs or their own. But that was the essence of their trickery, some said, *not* to lie about provable things so we'd believe their Big Lie.

They came here from Hell and were

devils; that was the most commonly believed alternative to their being Martians. There was much reading of the Book of Revelations. And many private revelations and prophesies, and many cults were formed. The Martians happily attended the meetings, but did not join.

And many people believed that they were gnomes, elves, kobolds or what have you, who had been here all along, living underground and in secrecy—but seen occasionally—and that now they had come out to the light of day; their purpose to exterminate mankind by driving him crazy and then to take over the world.

Some people—and this group included scientists—believed they were not from this universe at all, but from another dimension of the space-time continuum parallel to our own universe.

With the variations of these theories and dozens of others the Sunday supplements and the popular magazines had a field day.

But most people were perfectly willing to take them at their word that they were Martians and took the sensible attitude that even if they weren't, what did it matter?

The point was, what to *do* about them.

It was none of our business how long they were going to stay, and what if that meant they were going to stay forever? For all we knew, it could mean just that.

We *had* to do something about them.

And we were trying all right, on two levels, the active level and the passive level. Desperately, on the active level; doggedly, on the passive one.

The active front was just about every laboratory in the world. Brookhaven, Los Alamos, Harwich, Braunschweig, Sumigrad, Troitsk, and Tokuyama, to mention a few of thousands. And not to mention the attic, cellar or garage of every citizen who had a smattering of knowledge in any field that might be helpful to us by being hurtful to Martians: electricity, electronics, chemistry, white and black magic, witchcraft and voodoo.

The theory behind the active front was that Martians had to have an Achilles' heel *somewhere*.

They were bombarded with alpha rays; beta, gamma, delta, zeta, eta, theta, and omega rays. They were, when opportunity offered—and they neither avoided nor sought being experimented on—caught in multimillion volt flashes of electricity, subjected to strong and weak magnetic fields, sub- and supersonics, microwaves and macrowaves. They were subjected to cold near zero absolute and heat as hot as we could get it—which is the heat of nuclear fission. (No, that wasn't achieved in a laboratory, but an H-bomb test on an atoll which had been scheduled for June was allowed to proceed despite the Martians—who knew all our secrets anyway, as, after they got through tattling, so did everybody else. It was allowed to

proceed in the hope that a Martian would be inspecting the H-bomb when it was fired. One was. After the explosion he was observed inspecting the crater. "Is *that* the best you dopes can do, Mack?" he asked the admiral in charge after he had kwimmed back to the bridge of the observation fleet's flagship.)

Atomizers were used to spray Martians with prussic acid, Flit, heavy water, and holy water.

They were photographed—for study—with every kind of light anybody could think of: infrared, ultraviolet, fluorescent, carbon arc, candlelight, phosphorescent light, sunlight, moonlight and starlight.

They were studied—under considerable handicap, since one couldn't be dissected—by biologists. They were studied by psychologists, semanticists and demonologists. They were philosophized about by philosophers, preached about by preachers, theorized about by theoreticians.

Results to date:

They reflected light rays and so could be seen and photographed, but every other form of radiation went through them as though they weren't there—including radar; they didn't even blip. They were equally impervious to every form of matter and to every form of energy we could devise. They could talk, create sound, but nobody knew how. In theory, nothing cannot cause something to vibrate. Yet, since they could be recorded, the

sounds they created were real and not subjective.

Psychologically, they were completely alien to us. We could only guess at their motives for anything they did or said. We could only guess at why they were here and at when or whether they might ever leave. And one man's guess might be as good as another's, whether he be a top research man in psychology or an Australian bushman.

On what I referred to as the passive level, things looked bleak, but not quite so completely blank.

The human race could try—was trying and would keep on trying—to get rid of the Martians, but there wasn't much that the average man could do about it except, through government, support the programs of the specialists.

But the human race had another problem and it was everybody's problem—surviving and staying sane meanwhile. Or indefinitely, if the Martians stayed that long.

For most people, the only thing that made survival desirable was hope, hope that even if our scientists never found an answer some day—maybe tomorrow—the Martians might decide of their own accord to leave. They'd *come* so suddenly that it didn't seem impossible they'd leave the same way.

There was room for hope, even apart from our own efforts, as long as it was "none of our business" when or whether they might leave. Had the Martians

changed their line and *said* that they were here to stay permanently there would have been a wave of suicides that would have made the initial wave of them look like a ripple. Insanity cases would have risen on an exponential curve among the survivors as those who had been clinging to the shreds of sanity only through hope lost that hope.

For by the anniversary of their coming, in March of 1965, one thing had become clear. Nobody, but nobody, was ever going to be really happy again while the Martians stayed.

Everywhere, would-be leaders had tried to tell people how to ignore Martians and live lives as normal and happy as though there were no Martians around. ("There really *aren't*, if you close your eyes and stop your ears.")

But there aren't many pleasures in life—or many constructive things you can do—without using your eyes or your ears or both.

"Ignore the Martians," people were told. "Just don't look at them and don't answer them. Pretend they're not there."

It sounded sound and it should have worked, but it didn't. The would-be leaders who tried their own advice, as most of them did, were among the first to go insane.

Later, psychologists explained it. You *could* ignore a Martian, sure; you *could* pretend that he wasn't there, refuse to look at him, refuse to answer

him when he spoke to you. But if you did those things you let pressure of irritation build up in you like steam builds up in a boiler—and pretty soon you blew your top. Arguing with a Martian, cussing back at him, was a safety valve for the boiler of your irritation, helped you stay sane.

Incidence of insanity dropped when that fact was fully realized.

The Depression was still on, but didn't seem to be getting any worse.

Now that people were getting more used to Martians—not that anybody ever *really* got used to them—restrictions on the size of gatherings were eased. Attempts were made to bring back sporting events; they were moderately successful in some sports, not at all so in others. Boxing and wrestling were definitely casualties; beyond egging them on to kill one another the Martians did not interfere with the contestants, but they perched shoulder to shoulder along the ropes—top and bottom both—around the ring. No one in the audience could see what was going on inside the ring.

But one danger from the Martians was found, by spring of 1965, to be much less severe than it had been thought to be at first. I refer, of course, to the belief many held for quite a while that the human race might die out within a generation, if the Martians stayed that long, from lack of propagating itself.

There is no denying that, at first,

the sex life of the human being *did* take an awful beating. Knowing that Martians could see through walls, as well as in complete darkness, people were strongly inhibited.

This was not reflected in the birth rate, of course, until January of 1965, a week more than nine months after the coming of the Martians. During that month the birth rate dropped, in the United States, to three per cent of normal; in most other countries it dropped as much or even more.

But in February it had jumped to nine per cent of normal, in March twenty-two per cent. And when, in April, it took a big jump to sixty per cent, people quit worrying about it. Obviously in time, and not too long a time, our birth rate would be back to normal.

But what if they really intended to stay forever? Couldn't we, in that case, *somehow* either learn to take them in our stride or make our peace with them?

The answer is no.

Take the case, in late April, of Wilbur B. Updyke of Muncie, Indiana. It was eleven o'clock of a balmy, moonlit evening and Updyke was on his way home from a tavern, but perfectly sober.

He'd had three drinks but they'd just been an excuse for his being there. He'd found he could think better in the boiler-shop noise of a tavern than anywhere else.

He'd been thinking exactly along the lines suggested by the questions above. He was a good man and he'd rather make peace with them, he'd decided, than learn to take them in his stride. But he'd also had to admit to himself that the latter, as more likely to work, was the thing to try first.

Wouldn't it at least help, he was thinking, to learn to take Martians in one's stride quite literally, simply walk through them as though they weren't there—as, corporeally, they weren't.

Why did everyone walk around them, simply because they *looked* so solid, when they weren't solid at all?

Ahead of him a Martian was sitting down in the middle of the sidewalk. A perfect chance, Updyke realized, to see how it would feel to walk right through one as though it wasn't there, pay it no attention at all.

He hadn't tried it before and it took a bit of will power not to alter his stride in the slightest, but he succeeded. His foot went right through the Martian and down to the sidewalk—and up again in a high arc, his other foot following it. He took a fall that seemed to jar the very street itself.

The Martian had been sitting on, and thereby hiding, a banana peel.

Updyke groaned, wondered if he'd broken anything. Managed to get to his feet and decided that he hadn't, although he was going to be sore for days.

And that, he thought, was why you didn't take a Martian in your stride.

But what if, instead of reacting with anger—?

He looked down at the Martian. "I don't know why you did that," he said slowly, "but I'm not angry. I forgive you."

". . . you, Mack," said the Martian. You see what I mean.

VIII.

In June of the year 1965 a man with the mildly improbable—but bona fide—name of Hiram Pedro Oberdorffer, of Chicago, Illinois, invented a contraption which he called an anti-extra-terrestrial subatomic supervibrator.

Mr. Oberdorffer had been educated in Heidelberg, Wisconsin. His formal education had ended at the eighth grade, but in the fifty years that followed he had become an inveterate reader of popular science magazines. He was an ardent theorist and, in his own words, "knew more science than most of them laboratory guys."

He was employed as janitor in an apartment building on Dearborn Street near Grand Avenue, and lived in a basement apartment of two rooms in the same building. His duties, especially in summer, were not too onerous; most afternoons he could spare a few hours to sit and relax in his favorite spot, Bughouse Square, only a ten-minute walk from where he lived and worked. Bughouse Square is a city park one

block square and it has another name but no one ever uses the other name.

It is inhabited, in good weather, largely by bums, winos and crackpots. (Let us have it clearly understood, however, that Mr. Oberdorffer was neither a bum nor a wino.) Also, currently, by Martians.

Martians bothered Mr. Oberdorffer much less than they bothered most people; he had the very excellent good fortune to be completely deaf.

Oh, they bothered him some. Although he couldn't listen, he loved to talk. And in Bughouse Square he had become quite friendly with a man named Dusty who was Mr. Oberdorffer's converse and complement in that he rarely, almost never, spoke, but he loved to listen, especially to Mr. Oberdorffer, whom he thought a great thinker and a great man. Since Mr. Oberdorffer was fully in accord with him on this point, it cemented their friendship. So did frequent if small monetary donations called "loans" which Mr. Oberdorffer gave him at times when Dusty was not working, which was mostly. But Dusty's talents as a listener and admirer were more than worth the picayune sums involved, especially as Mr. Oberdorffer drew a fair salary, his own wants were very simple and he had no dependents or even relatives that he knew of.

Before the Martians came, these long one-sided conversations—in which he had explained to Dusty everything in science, psychology, religion and

every other subject, everything, that is, that could be explained and much that couldn't—had been the happiest times of Mr. Oberdorffer's life.

Now things were no longer quite so good. Frequently the expression on Dusty's face showed all too clearly that his friend was listening to something else instead of or in addition to what Mr. Oberdorffer was telling him. If he glanced around, he'd see a Martian or Martians and would know that he was being heckled. To Dusty's distraction and, therefore, indirectly to his own.

It irked him and he had decided to do something about the Martians.

In May Dusty was sent away to jail on a charge of having broken into and robbed a store. Mr. Oberdorffer had tried to help him, but had failed; Dusty's story to him was that he hadn't done it, the police had framed him; besides, he'd been drunk at the time or he'd never have tried it with Martians around. They had enticed him into the store and had then called cop on him. It was all the Martians' fault.

This irked Mr. Oberdorffer even more; he decided definitely to do something about the Martians.

Dusty's absence—it would be for six long months—gave him the opportunity to do all the thinking he wanted to do or needed to do. Every afternoon he'd sit in Bughouse Square, alone, and think. If he sat with his eyes closed, he was perfectly

insulated and could really concentrate.

He marshaled before him everything he'd read about atoms, about electricity, about electronics and about Martians—there'd been plenty about them in popular science magazines—and put them all together logically.

The logical answer came to him in June. He'd build an anti-extraterrestrial subatomic supervibrator.

He went home and built one, out of parts from several old radio sets, a vacuum cleaner and various odds and ends of pipe and plumbing fixtures.

He knew that it would work because he'd reasoned it out logically; the only thing he didn't know was whether it would work right away or whether it would take time—weeks maybe—to build up enough potential of vibration to do its job.

Wanting to know which, he waited until he saw a Martian in the room before he plugged it in. The Martian didn't disappear.

Mr. Oberdorffer sighed and went about his business, leaving the anti-extraterrestrial subatomic supervibrator plugged into the socket. It would take a while to build up potential; that was all. It didn't really matter; Dusty wouldn't be out for another two months anyway.

In June of the year 1965 a witch doctor named Bugassi, of the Moparobi tribe in equatorial Africa, made a juju against the Martians.

Throughout Africa and for a year

and a quarter now, lots of jujus had been made against the Martians, but this was a special case for several reasons.

Bugassi, for one thing, was conceded to be the best witch doctor in Africa. And, for a very good reason, he felt sure *this* juju would work even though his previous ones had failed. The very good reason was that this one *had* to work; M'karthi, the chief had given Bugassi a choice of getting rid of the Martians* or making a contribution of meat to the larder of the Moparobi tribe—who are cannibals. Not ordinarily, but for ceremonial occasions.

This time, if it happened, the ceremonial occasion would be looked forward to eagerly. The Moparobi were meat hungry.

All of Africa was meat hungry.

Some tribes, those who had lived exclusively, or almost exclusively, from their hunting, were actually starving. Other tribes had been forced to migrate vast distances to areas where vegetable foods, fruits and berries, were available.

Almost all of the creatures man hunts are fleet of foot than he and must be approached up-wind and by stealth until he is within killing distance.

The Martians loved helping the

*Chief M'karthi, of course, did not call them "Martians." He used the word "gnajamkata"; derivation of which is "gna"—meaning "Pgymy"—plus "jam"—meaning "green"—plus "kat"—meaning "sky". The final vowel indicates a plural; the word translates as "green Pygmies from sky."



natives hunt. Their method was to run—or to kwim—well ahead of the hunter, awakening and warning his quarry with gladsome cries.

Which made the quarry scamper like hell and the hunter return empty-handed from the hunt. Ninty-nine times out of a hundred without having had the opportunity to shoot an arrow or throw a spear, let alone hitting something with either one.

It was a Depression—different in type but at least as bad in effect as the more civilized types of depressions that were rampant in the more civilized countries.

The cattle-herding tribes were affected, too. The Martians loved to jump on the backs of cattle and stampe^d them. Of course a bull could not feel a Martian on his back, since a Martian had no substance or weight, but when the Martian leaned forward and screamed "Iwrig^o 'm N'gari"* in the bull's ear, at the same time a dozen or more other Martians were screaming "Iwrig^o 'm N'gari" into the ears of a dozen or more other bulls and cows, a stampede was on.

Africa didn't *like* the Martians.

But, back to Bugassi's juju: He knew that this one was going to work, not only because it *had* to work but because he had an excellent idea for making it a greater juju than had ever been. Although he knew himself to be the greatest witch doctor in the coun-

try, there were two others who came close to him—old Gibando of the Mitak tribe and N'jili of the Wessas. Also, they were close to him geographically; neither more than two days' travel away.

Every witch doctor has his own secrets and keeps them to himself. But if, for such a vital purpose as this, three of the best of them pooled their knowledge—only, of course, that part of it that applied to the making of drive-away jujus—the product should be infallible.

Obtaining M'karthi's permission and an escort of warriors, he made trips to visit first N'jili and then Gibando. From each he added to his knowledge.

Back with the Moparobi, he started to work. It was a complicated juju containing, in addition to all the ingredients he had used before, new ones. And on ingredients which, he had learned, were in common use among the three of them, he now had three sets of incantations to perform. Head of snake and heart of frog, dead man's eyeball, tail of dog—

It was three days in the making, that juju and it was almost as large as a man's head when it was finished. M'karthi watched the finishing of it. Bugassi looked up. "I bury him," he said.

"Bury him quick then."

Bugassi dug and buried the juju, covered it over with the final incantations, then called the tribe together to dance around the spot.

* Hi-yo, Silver. (It was a favorite phrase among the Martians.)

But the dance was an irregular one, because of the Martians. The Africans—smarter than Wilbur B. Updyke of Muncie, Indiana—were sensibly superstitious about stepping on or walking through Martians. And they got in the way so.

After the dance, M'karthi frowned and pointed to Martians. "Gnajamkata no go," he said. "Juju no good?"

Bugassi folded his arms. "Juju good. Juju will rot. When juju has rotted, gnajamkata go. One moon."

The juju would work, all right. It *had* to, or else.

And also in June of the year 1965, Yato Ishurti, then Secretary General of the United Nations, made an unprecedented radio address to the entire world. Using a newly developed throat-mike which enabled him to talk without the possibility of interference by Martians, he spoke from the United Nations headquarters building in New York to what was undoubtedly the largest audience which had ever heard the voice of one person.

The build-up and preparations had taken two weeks and were exhaustive. It was picked up and rebroadcast by every broadcasting station in the world and by every ship at sea.

He spoke slowly—in English, which he spoke as fluently as his native tongue—so translators could relay it while he spoke in every language of the civilized world. Arrangements had been made wherever possible in the

primitive countries to have natives come in and listen to on-the-spot translations at the nearest receiving sets.

Barring a few savages and children too young to talk or understand, just about every human being on Earth must have heard him. Not to mention almost a billion Martians.

He said: "People of the world, I speak through you to our visitors from Mars. But it is necessary that you, too, listen so that when I have spoken you can answer a question I shall ask."

He said: "Martians, you have not, for whatever reason of your own, taken us into your confidence as to why you are here. Possibly your psychology, your thinking, is so alien to ours that we could not understand even if we were told.

"Possibly you are really vicious and evil and our pain gives you pleasure. Possibly you are truly vindictive and quarrelsome.

"But I do not think so.

"If you are what you seem or pretend to be, we would find you—at least on rare occasions—arguing or fighting *among yourselves*.

"This we have never seen or heard. Martians, you are putting on an act, pretending to be something that you are not."

Across Earth, there was a stir as people moved.

He said: "Martians, you have an ulterior purpose in doing what you have been doing. It can—unless there

are things I do not comprehend—be one of two purposes.

"It can be that you came here for our good. We were split, divided, hating one another, frequently warring and always on the verge of war. Now you have given us a hatred so great that we are united against you so strongly that we are one race, one world."

He said: "Martians, it is possible that your purpose in doing what you do is less benevolent, but still not inimical. It is possible that, learning that we stand on the verge of space travel, you do not want us on Mars.

"It is possible that, on Mars, you are corporeal, vulnerable, afraid of us. You fear we might try to conquer you—if not soon, then centuries from now.

"Or maybe we merely bore you—certainly our radio programs must have—and you simply don't like us and don't want us to visit your planet. So you visited ours first, as tourists."

He said: "Whichever of those reasons is your real reason—if either of them is—you did not tell us because you wanted us to see for ourselves, not to need to be told.

"Is it important that we know or guess correctly which of those purposes is your true one?

"Whichever it is, I will prove to you that you have accomplished it."

He said: "I speak, and I shall prove that I speak, for all the peoples of Earth.

"We are through warring and quarreling among ourselves.

"We shall not, we shall never, send a single spaceship to your planet—unless some day you invite us to. I think we might need persuading, even then."

He said: "People of Earth, are you with me in both of those things? If you are prove it now, wherever you are, with an affirmative in your loudest voice! So that the translators may have caught up with me, wait until I give the signal . . . Now!"

"Yes!"

"St!"

"Oui!"

"Dah!"

"Ja!"

"Si!"

"Sim!"

"Shel!"

"Hay!"

"Nam!"

"Jes!"

And thousands of other words that all mean the same thing, from the throat and from the heart of every human being who had been listening, all at once, all over the world.

It was the strangest sound ever made. Compared to it an H-bomb would have been the dropping of a pin, the eruption of Krakatao a faint whisper.

The Martians on Mars should have heard it.

If the Martians on Earth heard it, they gave no sign. Of course, it's

possible it meant nothing to them.

They stayed, and acted as they always had acted.

IX.

For almost a month.

Suddenly, on the 18th of July, 1965, at 3:22 in the afternoon, Greenwich time—other places, other hours—all of them were gone, as simultaneously and as suddenly as they had come.

We still don't know why they came.

Or why they went.

Of course there are more theories about the latter than about the former.

One man in Chicago definitely knows that it was because at last his anti-extraterrestrial subatomic supervibrator had built up sufficient potential.

One African witch doctor definitely knows that it was because his juju had sufficiently rotted in the ground to take effect. And his tribe and some of the surrounding tribes agree with him.

(And I gave those two cases only as examples; thousands of inventors and thousands of mystics had been trying thousands of things; each thought he had succeeded.)

More people—in fact many people, enough to elect him first World Presi-

dent—thought that Yato Ishurti's estimate of the situation had been correct, that one or the other of the alternative purposes he had mentioned—conceivably, even both—had been the true purpose of the Martians. And that they had waited—and watched—for a few weeks to make sure that we really *meant* that colossal affirmative.

We did.

Not that there aren't millions of people who believe that the Martians came and left for reasons of their own and that Yato Ishurti's speech had no more to do with their departure than did Oberdorffer's supervibrator or Bugassi's juju—yet none, but none, of those people wants war or trouble here or wants to go to Mars. Just on the *off chance* that Ishurti might have been right, or partly right.

*They might come back.**

*An interesting aftermath of the visit of the Martians and one that shows clearly the attitude we had for them is the case of *World Government vs. John Laughton*. In February of 1966 Laughton was tried for the murder of one Walter Brannon in Pebscott, Indiana. Laughton's defense was that he had been chopping wood at the time, that the said Brannon had come up quietly behind him and had said, "Hi, Mack." He, Laughton, had turned and killed Brannon with the axe. Despite the fact that it was proved Brannon had a friend still named MacKinnon—most people in the United States named Mack or with Mac- or Mc- in their names had already changed names—and that said MacKinnon had closely resembled Laughton and, therefore, Brannon's greeting had probably been a legitimate mistake, the unanimous ruling of the court was: justifiable homicide, *summa cum laude*.

THE END



MISTER PINSCHUR

BY MAURICE OGDEN AND BETTY FULLER

*The little man had just one little question.
But such a nasty, devastating question!*

Illustrated by Shapiro



This morning, while I was carrying out Mr. Pinschur's instructions, a man asked me a question that ruined my whole day.

My attention was first attracted to the man by the persistence of his stare. An altogether usual-looking man in a cloth cap, he had been leaning idly against a pillar in the lobby in which I was working. Inactive people are not my professional concern, so it is possible that he had been there for some time before I noticed him.

I was covering a busy commercial center, and the throat of the building swarmed continuously with a surge of striding legs and bobbing heads and tense arms clutching brief cases and folders and sacks of currency. With so many people bent upon obscurely comprehended missions, I had my hands full.

My job is a deceptively simple one, involving the questioning of people engaged in routine human activity—the signing of a check, the driving of a nail, the turning of a knob—the infinitely varied habitual behavior that is the underpinning of social order.

I caught only occasional glimpses of the man in the cloth cap as I moved rapidly around the lobby, leaving in the wake of my question a trail of the affronted, the amused, the disturbed. The expression of his eyes, as they followed me, sobered gradually from curiosity to an intensity that might have reflected either great interest or deep anger.

The knowledge that you are being watched is always distracting to some degree. It put me off my poise and finally caused me to fumble an interview. I had stopped and questioned a perspiring executive type who was nervously trying to force a bulky envelope into the mail chute.

"It's none of your blasted business!" he shouted irritably.

It was not an unprecedented reply, but the knowledge that it was being minutely observed caused me to give ground before his violence, so that I collided with a porter who was edging behind me with a huge carton of paper clips. I did not really recover my self-possession until I had apologized to the porter and, turning back to the man muttering at the mail chute, observed the irritation around his mouth relaxing into a querulous uncertainty.

The man in the cloth cap strolled over then, and asked me for a light. I handed him my matches, debating whether to comment on his apparent interest in my work. He lit his cigarette and, waving the match slowly, studied my face for a moment.

Then, blowing the smoke civilly to one side, he leaned toward me and asked in a confidential tone: "What good will it do you to destroy civilization?"

Now, when a total stranger asks you a question so appalling as to be meaningless, your first impulse is to

consider him a crank or a madman. Nevertheless, it can be a powerfully disrupting experience. It derails your thinking, so to speak, and by the time you have righted yourself you are disturbingly aware that it may not be you, but the rails, which determine your course.

That is what happened to me. Before I could think of any sensible reply, the man in the cloth cap had murmured an apology and disappeared into the crowd. Almost instantly I was seized by an impulse to call him back, to ask him what unsuspected quality of my person or occupation suggested such deadly intention.

Severely shaken by the encounter, I returned to my work. Throughout the day I continued to puzzle over the encounter, to consider and discard replies I might have made. The idea occurred to me, as it inevitably would occur to any new man on an unsupervised job, that the man had been an employer's spotter—that I had been tested and, very likely, found wanting.

This immediately led to a whole catalogue of possibilities. The incident might have been planned by some unsuspected rival agency with the purpose of disrupting my work. On the other hand, it was possible that my own firm had, unknown to me, other agents in the field. In that case, his work obviously involved a stage considerably in advance of my own.

Of one thing I was certain—I had

reacted improperly. More than idle curiosity had prompted his query and, whether he was competitor or colleague, Mr. Pinschur would certainly have expected me to ask my own question in reply.

I had obtained this job with Mr. Pinschur as the indirect result of an unsuccessful application for another job—one that had ended in a fiasco, as a matter of fact.

Two weeks ago, I replied to an ad in the "Help Wanted" column giving notice of an opening for a crossing-guard at a private school. It appealed to me immediately. I am not a young man any more, and this sounded like a sedentary and constructive occupation.

The girl at the desk took my application with a look of harried determination.

"I'm on the verge of utter collapse," she sighed. "You're the fiftieth one today, and there's been something wrong with every *one* of them so far."

Her face brightened as she began checking off my listed qualifications against a form on her desk, murmuring "Um-hum!" after each one. Between checks she confided that it was certainly a relief to find such a normal, ordinary-appearing applicant, and that I'd *adore* working for Dr. Pelman who was an absolute doll.

Encouraged, I ventured a sally concerning the disadvantages of working for human beings, anyway; and

she gave me a sidelong glance and said that if there was any one thing Dr. Pelman did appreciate, it was dry whimsy.

Then she stopped, pencil poised despairingly.

"Oh, *darn!*" she muttered, adding, "you haven't studied Latin. It's one of the requirements."

"Why?"

"Here, look," she said wearily, "it's on the list."

"I don't mean that — I mean, why does a crossing-guard have to know Latin? The children speak English, don't they?"

Her eyes widened. "Why, I don't *know* why." Her eyes narrowed. "But I'll darn sure find *out!*"

She got up in a resolute swirl of plaid skirt and flounced into the inner office.

She was gone twenty minutes. When she returned, she flung her pencil onto the desk like a rejected badge of servitude and began dragging on her coat.

"There's no use you waiting if you don't know Latin," she said grimly, "*he* doesn't know why. When I insisted on a reason he . . . he *swore* at me!" For a moment a wan disillusionment flickered in her eyes. "Dr. *Pelman!*"

The first thing that incident accomplished was to change my approach to seeking employment. Standing at the bus stop outside the school with

the exhausted list of "Help Wanted" notices in my hand, I decided to place an ad of my own—a modest listing in the "Situations Wanted" column, stating that I was an ordinary man with ordinary qualifications, willing to do anything within my ability.

No use chasing finicking employers all over town, I told myself firmly; let your employer come to you.

Mr. Pinschur came to me that night, in my room. He came in through the window.

I remember hearing a slight scraping outside the window a few seconds before he spoke, but I had paid no attention to it because birds and large flying insects frequently blunder against my window when my light is on.

Mine is an unpretentious room on the fourth floor of an old building. The management discourages excessive use of electricity, and I imagine the dim bulb over my bed was the only light on at that hour. The newspaper people had considerately provided me a copy of the evening issue with my ad in it, and I had been lying in bed examining it. The ad was satisfactory, aside from the fact that they had spelled my name "Stuggs" instead of "Suggs." I was just reaching for the light switch when Mr. Pinschur spoke from the window.

"Mr. Suggs," he said, in a high, rasping voice, "Pest Control, Incorporated, has a job for you."

Startled, I sat bolt upright in bed. He stood with one hand on the sill, breathing asthmatically from the climb, and suggesting in the dim light a man rather long and thick in the body, with short, bowed arms and legs.

"Very busy," he panted. "Yes or no?"

He shuffled rapidly across the room, uninvited, and took the chair opposite the bed. It was a warm night, but he made no motion to remove his coat, which was of an old-fashioned cut, dark, stiff and elegantly swallowed. It retained its shape as he hunched in the chair, his little legs drawn up slightly and his head thrust aggressively forward on its short neck.

I pulled myself together with a determined effort. It was the first offer I'd received in weeks of searching and as such it had a right to enter in any manner it saw fit. Even so, the name of the firm suggested an unpleasant line of work.

"Pest Control?" I asked, dubiously. "Exterminators?"

"Depends on your point of view," he said rapidly, "word always depends on point of view. One human being calls another one, say . . . insect. Insult. Insects offend each other with word 'People' don't you imagine? Your job . . . psychological, might say. Thoroughly discussed by Board of Directors . . . dovetails overall operation— Well?"

"But, *Pest Control* . . . I was always

under the impression that meant—"

"Control," he interrupted, wheezing, "word again. Like a scorpion—claws at both ends. Now, you take term like, say . . . 'flood control.' You control floods to keep floods from controlling you—right?"

"Well, I guess so, but—"

"Right. Now, get this picture—machine, say, running under control. Controller walks off. Machine goes on running. Habit. Inertia. Excellent opportunity, wouldn't you say . . . disrupt function, apply new set of controls, nobody the wiser?" He inhaled noisily, staring at me in unblinking triumph.

"All right," I said, thoroughly mystified, "what do your, uh, Pest Control people have in mind?"

He chuckled raspingly, caught his breath in the middle of it, and coughed.

"Could say purely humanitarian. Correct, too. Expect more, naturally. Count on great opportunities for Pest Control, frankly. Immense benefit society, either way."

He had his wind back now, but the staccato appeared to be his normal mode of speech. It caromed from side to side of a subject like a fly in a bottle.

"Society very delicately balanced organism. You're not young man; older than you, good bit, myself. Unique opportunity observe society my younger days. Appearances deceiving. Take something, looks entirely stable—say, drinking glass.

Shatter with a musical note. Fact. Used to watch man do that every morning in his bathroom. Self-respect completely dependent on the accomplishment. Wouldn't go out all day if he failed. Bloodthirsty brute," he added, broodingly, "tried to destroy me with a cake of soap when he caught me watching."

"I'm afraid I'm not exactly the type of man you're—" I began doubtfully.

"Think you could ask a thousand people a week one simple question?"

"Well, I suppose I . . . if it wasn't an improper question—"

"Willing to pay what it's worth to us—" and he mentioned a figure that took the wind out of me.

"Satisfactory?"

I nodded, dumfounded.

"Good." He flipped himself upright and produced a thick envelope from beneath his coat.

"Instructions. Letters introduction. Should get you admitted highest people. Use sparingly—stick to ordinary people, routine occupations. That's note to strike. Right?"

He scurried to the window.

"Salary in your left shoe every Friday morning, agreed?"

I nodded again, swallowing. He threw one short leg over the sill.

"One thing I'd like to know," I said, locating my voice finally, "how'd you happen to pick my ad?"

He turned stiffly, one eye twinkling at me over his shoulder.

"Not ad entirely," he wheezed, "recommended. That interview out at that school. Overheard by one of our contacts. Hiding behind baseboard."

He whisked out the window. I hurried across the room and looked out after him. The fire escape appeared to be empty. Before I could give it a thorough examination in the uncertain light, my attention was distracted by a shadowy movement at the corner of the building near the second-floor level, as though of some large body scuttling head-downward toward the street. It disappeared before I could get a clear view of it. Mr. Pinschur was nowhere to be seen.

When the man in the cloth cap implied by his question that I proposed the destruction of civilization, he was confronting me with a shocking idea. It is understandable that a person would be confused and speechless, as I was, in the face of so monstrous a suggestion.

On the other hand, it is surprising to find that a question as innocent and reasonable as Mr. Pinschur's should disturb anyone. Nevertheless, it does.

Some people, like the man weeding his garden, have a ready and sensible reply. Others, like the girl demonstrating the whistling yo-yo in a department-store window, simply refuse to take the question seriously.

But the bulk of the harried, routine-ridden people I interrupt with my query appear to be unaccountably

affronted or embarrassed. One sad-faced elderly gentleman, who was walking one of those dogs that appear to be constructed of pipe-cleaners, kept shying away as I approached him. Instead of a reply, he gave me a resigned, sheepish grin and hurried on. Many people—who, I suspect, have no real answer and know it—become angry or insulting.

And then there was the stable attendant at the Country Club.

It was not, actually, the sort of place that I would ever have considered invading, if it had been left up to me.

But last Friday morning I found my first salary tucked neatly under the lace of my left shoe when I arose, and with it a small square of paper, hardly larger than a postage stamp. The message written on it, in an incredibly tiny script as precise as a steel engraving, conveyed a familiar quality of breathlessness:

"Service satisfactory on Subject at work. For Subject at play, over week end try First Resort."

At first the cryptic, vaguely-conspiratorial message suggested nothing to me. I puzzled over it for the better part of breakfast before it occurred to me to run down the classifications suggested by the words "at play" in the yellow pages of the telephone book.

Sure enough, under "Clubs" there was a small, dignified box giving an address and number for:

"The First Resort Hostelry and Country Club—Rigidly Restricted to Serve the Select—"

It was still early morning when I reached the First Resort. After some hesitation, I directed my steps toward the only evidence of life, a small shed attached to the stables, from which issued a rhythmic ringing and an occasional protesting snort.

I muffed my first encounter. I was passing the corner of the hostelry—walking on a sound-deadening lawn that looked as though it needed a vigorous brushing against the nap to give it a realistic appearance—when a man appeared suddenly from behind the building. He was pushing a little dolly of golf clubs and grumbling over his shoulder at a sullen-faced woman who plodded sleepily behind him.

"... Can just as well get your beauty sleep at home where it doesn't cost three dollars an hour—" he was saying. He looked up and saw me.

"You a caddy?" he demanded.

"No, sir, I—"

"At three dollars an hour it does look like they could have a caddy ready when a man wants one," he growled, and toiled off across the lawn.

In the shed, a man was shoeing a horse—a horse with a severely cropped mane and tail and a long, aristocratic nose down which it rolled a disapproving eye at my intrusion.

A towering figure with a patient, intelligent face, the smith shut off the

bellows and stood in the flickering light of the forge with his ear bent attentively to my question. Then, after pondering for a moment, he laid his hammer deliberately on the worn anvil. He stripped off his greasy leather apron and folded it across the hammer.

"You know," he said thoughtfully, "you're right. I never considered that angle before."

Wiping his hands on a piece of waste, he ambled out into the morning sunshine, leaving me in the deserted smithy. I looked after him in wordless amazement until an indignant snort behind me brought me back to my immediate surroundings. The horse, abandoned, stood impatiently on three legs beside the anvil. The fourth leg, bent and poised, exposed its shoe, one nail still unset.

I waited, but the smith did not return. After a while the offended horse put all four feet on the ground and stalked out, favoring the insecure shoe with martyred attention.

A few minutes later I heard a distant bellowing, of which I could distinguish only the phrases: "... Dollars an hour—" and "... Could keep animals off the green—"

When I left, I snapped the padlock on the door. I suppose I had begun to share the horse's obvious conviction that the smith would not be back. The man had left with the air of having found an answer he had been seeking for a long time.

I think he must have misunderstood me. Actually, I did no more than ask him Mr. Pinschur's question:

"Why are you doing that?"

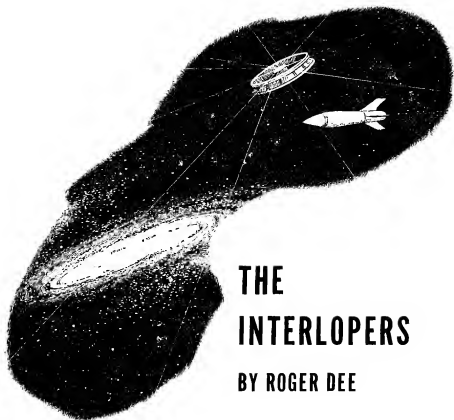
THE END

IN TIMES TO COME

Next month's issue will be the October 1954 issue of Astounding Science Fiction. Twenty-one years ago Street & Smith brought out the October 1933 issue of Astounding. For twenty-one years, twelve times a year, Street & Smith has brought out this magazine—a record of continuity in the peculiar, frontier literature that is science fiction. In a traditional literature, where stability is essentially the static state, continuity represents "the same fine product for the last umpteen years." In science fiction the situation is bound to be different. As a traditional form has the stability of a granite block; a frontier literature has the high-order stability of a spinning gyroscope. Tradition has Being; a gyroscope has Direction.

Astounding is anything but the same as it was twenty-one years ago—the continuity is not in Being but in Direction, in motion. But motion is change and the motion of the magazine must be growth.

Some of you long-time readers may be interested in checking back over more than two decades to see if there is continuity of growth. THE EDITOR.



THE INTERLOPERS

BY ROGER DEE

There's a great difference between potential and developed power. The one is clearly visible and can be awe-inspiring. The other may take a demigod to recognize.

Illustrated by van Dongen

For the brief time that the intercepting craft hung on the ship's foreign-body screen, Clowdis felt himself pulled taut as wire with the strain of uncertainty. When the expected finger of the communications beam reached across the distance and he saw the

reddish reptilian face of the other commander, and the faces of others like him ranked in the alien control room behind, his sigh of relaxing tension was not an expression of relief but of resignation.

"Korivians," Vesari said, unneces-

sarily, from the navigator's place beside him. "T'sai bodyguards—and from the number of them, there's bound to be some T'sai aboard. We're going to meet the galactic masters at last, Ed."

Without turning his head, Clowdis called: "Shassil!"

Their Cetian interpreter came forward at once, his oddly angled body tensing and his narrow goatish face taking on the galactic's inevitable air of deference when he saw the faces on the screen.

"Find out what they want of us," Clowdis said.

The Cetian touched his beard respectfully—not to himself, Clowdis noted, but to the Korivian captain on the screen—and spoke in a swift rush of sibilance. The Korivian answered in turn, beaked lizard-face expressionless as reddish stone.

Shassil touched his caprine beard again and turned from the screen. "You are to shut down the ship's engines," he said to Clowdis, "and gather all hands below."

Neither Clowdis nor Vesari, knowing themselves as far out of their depth as kittens in a computing room, considered demanding why. But Vesari paused at the down-spiraling ramp of companionway and Clowdis, feeling a curiously unreal sense of experiment, paused with him.

"What do you think they want, Shassil?" Vesari asked.

The Cetian considered him gravely

with long-pupilled eyes. "When a T'sai is near," he said, "I do not think at all."

A literal truth, Clowdis thought as he went with Vesari down the steep twist of helicline, and not one confined to Shassil nor to Cetians alone. A hundred thousand races from rim to rim of the galaxy—the least of them, so far as Clowdis had seen, older and wiser and infinitely stronger than his own upstart culture—suspended opinion when the T'sai spoke.

As if the T'sai were not flesh like other creatures, but gods. But *were* they flesh?

Clowdis smothered an incipient flare of resentment by reminding himself that he was after all a newt in strange waters, a minnow among sharks.

When in Rome one does as the Romans do, he told himself wryly. *When in space—*

"First things first," he said aloud. "We'd better break the news to Buehl in the engine room before we see Barbour and the colonists."

Powermaster Buehl took the T'sai order with a bellicose impatience that was an index to his temper. A thick-bodied and heavy-minded man of middle age, given when off duty to solitary drinking and deadly serious absorption in his collection of Wagnerian tapes, he was devoted to his atomic charges with a singleness of soul which Clowdis, who had gone to

space for the sheer restless love of seeing, had never been able to understand.

"Draw my men from their stations?" Buehl demanded angrily when Clowdis found him at his engine-room desk. "Damp the piles, kill the ship?"

He had an incredulous mental picture of the ship not driven but drifting, helpless as a crippled fish in treacherous waters, an image sharply defined within the familiar bounds of his power section but growing vaguer when extended to minor reaches of cargo holds and crew quarters and many-tiered bunking cubicles filled with chattering, cow-eyed colonists. Control section and hydroponics, galley and hospital bay did not register at all in Buehl's regard because they lay in the seldom-visited and dispensable upper level; the power that drove the ship like a metal thunderbolt through space was everything to him, and he would no more have throttled it voluntarily in midflight than he would have taken a blade to his own throat.

"This is the moment we've dreaded since we first touched at Sirius ten years ago," Clowdis reminded him. "There are *T'sai* out there, Buehl. Get your men to crew quarters on the double, or I'll iron you and put Simmonds on the engines."

The threat defeated Buehl as no other could have, as Clowdis had known it must. The powermaster gave the order from his desk communi-

cator, but did not follow when his puzzled subordinates filed past him out of the power room. He remained in place, glowering through the uneasy silence that followed the sudden cessation of engine noise, long after the others had gone.

And slowly he began to realize something of the gravity of their position, piecing it together gradually from those accumulated bits of experience that had reality for him. The aesthetic had no existence for Buehl beyond his instinctive response to Wagnerian clamor; the social and economic intricacies of alien cultures left him as unmoved as did those of his own, and for the emotional drives that made men and not-men what they were he had only contempt.

But Buehl respected Power. He thought of it as an entity spelled out in upper-case symbols, a name synonymous with deity.

For Buehl was powermaster in his own sphere, and he had seen power beyond imagining.

His first stunning surmise as to what power could be like had come at the end of man's initial stellar jump—Buehl had been an engine-room member of that original expedition, but the glory of pioneering meant nothing compared to the feeling of mastery over the surging forces under his hands—to the far-swinging Sirian worlds. He recalled vaguely a swarming society of upright anthropoids, disturbingly manlike for all their chitin-

ous jointure and wonderfully, if incurably, courteous.

Their engines he remembered better.

The Sirians had outgrown atomic energy millennia before. Somehow they tapped the force reservoirs of their giant sun, and a single monolithic station on each planet supplied power that could have pulverized a world but which instead drove their beautifully mechanized economy with the purring smoothness of a fine chronometer.

The Eridanians had used subatomic binding forces to make a perpetual paradise of their single slowly-freezing world, and the Cetians, Shassil's people, drew limitless energy from the gravitic strain-currents that permeated space. A single building there housed a power more formidable than the total output of Earth's straining generators.

The hundred thousand other peoples of whom Earthmen had heard, but into whose spatial backyards they had not yet penetrated, had power as great and as varied. And over them all loomed the T'sai, the masters and mentors, the teachers and governors, who owned the secret of instantaneous transfer and who ruled with a word.

What, Buehl wondered, was power to the T'sai?

To the T'sai his own shining converter plant would be more primitive than Hero's steam engine. To them

he was not a powermaster but a savage, squatting vacantly over the first-kindled spark of atomic force.

For the first time in his career Buehl, with his beloved engines silent under his feet, felt the frustration of utter insignificance.

Rumors of the emergency had already reached Barbour in his quarters, and he was—as Clowdis had expected, understanding as he did the agile thoroughness of his psychologist-propagandist's mind—busily organizing a program to reassure crew and colonists alike.

"We expected to meet the T'sai eventually," Barbour said. He was a tall man, stooped and spectacled and balding, his mild light eyes normally veiled with habitual introspection. "As well get it over with now as later, Ed."

"They'll know about us from cultures we've visited already," Clowdis pointed out. "We're going to be weighed and judged and perhaps fitted into their scheme of things, Frank. The lot we draw is going to be largely up to you."

Barbour sighed. "I know. Ed, I wish they had caught us earlier, before we started to bring out colonists—We're trespassers to begin with, and to unload our surplus population out here without T'sai permission may prejudice them against us."

Clowdis shrugged. He had anticipated such a development from the

first and had opposed the colonization project; but political pressure at home, the necessity of justifying the enormous expense of interstellar exploration, had defeated his objections.

"We had to make the try, with that perfect oxy-nitrogen planet of Regulus lying unclaimed," he said. "And we'll have to do the best we can with the T'sai now."

Clowdis moved on to the task he hated most, explaining to the colonists what might be expected of them.

Barbour, left alone, took off his spectacles and wiped them thoughtfully, his trained mind running carefully over the possibilities. Barbour, like Clowdis, had come to space under the lash of curiosity; not in his case to satisfy any restless yearning for adventure, but to push his investigations into the minds and manners of alien races as he had pursued them into his own society. The fact that intelligence was galaxy-wide instead of confined to his own insular sphere had fired his imagination from that first flight to Sirius—that that intelligence should follow such divergent paths, yet should always arrive at the same conclusion in the end, at once challenged and perplexed him.

Each culture they had touched, he considered, was older and wiser and immensely more powerful than Earth's, so far superior as to put his own handful in the position of a canoe-load of savages paddling wide-eyed through the harbors of a great city.

Yet these aliens were different after a fashion the nature of which had persistently eluded him.

The galactics traveled widely in pursuit of trade, making jumps of a magnitude inconceivable to an Earthman's mind. They lived in comfort and peace, without want or war, each society presenting a new variation of Utopia which only emphasized the homogeneity of the whole.

The nature of that unity came to Barbour now of itself, and he cursed himself with academic invective for not having seen it earlier.

There was no real progress out here—and had been none, obviously, for millennia. Each culture was balanced precisely to suit the demands of its own peculiar mores, but he had yet to skirt the fringes of an alien philosophy which was not founded on fatalism and *laissez-faire* resignation.

The galaxy was static. And what made it so?

The T'sai.

The realization brought Barbour a feeling of profound depression. So many promising beginnings intercepted and channeled to ultimate mediocrity by the super-race, so many vaulting young ambitions crushed to compliance with superior will!

And Earth?

Earth, Barbour thought, was the newest entrant to this cosmic kindergarten, the downiest yokel coming afoot in brash ignorant daring to blink at the bright lights of civiliza-

tion. To be monitored and graded and assigned a niche, if found worthy of the trouble, in the T'sai economy.

To Barbour the truth behind the universal resignation he had seen was suddenly and chillingly clear. Why struggle, why toil and sweat for an ideal when the striving is doomed to failure from the start?

Earth, again.

Men, reckless of odds and intolerant of opposition, were never a docile people. Taken in hand by the T'sai, they might resent such regimentation forcibly. And then —

Barbour, like any good psychologist, knew when to drop a line of thought and close his mind to an unpleasant conclusion.

Clowdis was waiting with Shassil and the others at the conference-room table—Vesari fidgeting over an unwanted cigarette, Buehl a little drunk and more surlily taciturn than usual, Barbour humped moodily with his mild eyes fogged in thought—when Wilcox hurried in to take his place.

"Sorry to be late," Wilcox said. His voice betrayed an habitual diffidence, an unconscious surprise that he should have been chosen to sit in consultation with the powers of the ship. "I've been elected to represent the colonists, sir. I'll do the best I can."

Clowdis accepted his presence without comment, avoiding his eye because the man's meekness was somehow offensive to a spaceman's sense of fit-

ness. Wilcox was a small, pale man with neutral hair and troubled eyes, a former hydroponics operator who had sold his job-registry rights in Greater Pittsburgh to raise fare for his wife and himself to Regulus. He had been chosen now, Clowdis knew, for the reason that Wilcox *was* the average colonist—anxious to please, inoffensive and without initiative or ambition beyond his own small interests.

"Good enough," Clowdis said, and looked across the table at Shassil. "What can you tell us now, Shassil?"

The Cetian sighed, revealing twin rims of cartilage that served him in lieu of teeth. "Little, beyond the fact that the T'sai will board us soon for an interview. After that—"

"After that," Buehl interrupted, "the little gods of space will give us their word, and the word is Power." There was a growl in his voice which he did not try to conceal.

"Easy," Clowdis cautioned, "we've passed on sufferance so far, Buehl, only because none of the peoples we've visited had orders from the T'sai to stop us. We'd be mad to make trouble now."

Barbour looked up, his mild eyes sharp with interest. "You said *the* T'sai, Shassil. Does that mean there's only one of them aboard the Korivian ship?"

The Cetian nodded. "The T'sai travel seldom, and then singly. But the T'sai are not as we others—to them

one is all and all are one."

He rose from the table. "My presence constrains conversation, I think. I shall wait for the T'sai in the control room."

He left, for all his galactic politeness, without touching his beard in the Cetian gesture of respect. Clowdis, thinking of that goatish creature holding solitary sway over *his* control room, felt a quick surge of anger and quelled it as quickly.

"He's right, you know," Barbour said. "It's our problem, Ed, and we couldn't talk freely with Shassil sitting in."

"What is there to talk about?" Vesari demanded fretfully. "If we can't *do* anything, what's the use of talking at all?"

"We're not planning to do anything," Clowdis pointed out. "We're only here to assess the possibilities, and to wait."

"The possibilities are soon numbered," Barbour said dryly. "They can kill us or imprison us, send us packing home again or ignore us."

Clowdis said positively, "They won't ignore us. I've made a hearsay study of the systems we haven't visited yet, and every one is an integral part of the T'sai realm. Personally, I can't see that we'd fit into such a scheme of things—I think we'll be lucky if they let us go home again."

"Is it really as bad as that?" Wilcox asked in alarm. The face he turned on Clowdis had gone even paler than

usual. "I mean—we *can't* go back, we colonists. There's no place for us!"

Clowdis kept the annoyance from his face with an effort.

"The conditions of this Regulus expedition were carefully explained before the flight, Wilcox. Your people understood from the start that we were on shaky ground out here. You knew the chances you took when you signed away your job-rights."

The colonist subsided, blinking. He was thinking at the moment not of galactic rights and powers but of his wife, of the child to be born to them in half a year and of the seventy-odd other couples waiting in the lower level for his report. To be turned back now meant more than a return to the desperately crowded warrens of Earth; with the surrender of their rights they held no status whatever, and the only course open was compulsory migration to a drab and driven existence, infinitely worse, in the domes of Mars or Venus or the moons of Jupiter.

The soft green planet of Regulus that lay short hours ahead was heaven by contrast. To give it up now, when they were so near—

They felt the presence of their inquisitor even before Shassil presented him, the slightest feather-touch of exploratory thought that was like a momentary, not unpleasant, itching at the roots of the mind.

The Cetian interpreter sidled into the conference room with a hand at

his beard, his long-pupilled eyes down-cast.

"The T'sai," Shassil said reverently.

They rose together, incredulous, stunned by the unsuspected possibilities opened by their first sight of a galactic master.

The T'sai was a man.

A small man, smaller by a head than even Wilcox, but looming like a Titan through the aura of power that hung about him.

"You think yourselves worthy of claiming our empty worlds," the T'sai said. "Prove it."

And left them alone with their problem.

"... Not of the same species as ourselves," Barbour said. Even an hour later he found the truth overwhelming, the wonder of it still blinding to reason. "It's impossible! The straining of coincidence—"

"He's no oxygen breather," Clowdis said. He felt like a man struggling up from drugged sleep, regaining the sharp use of his senses with slow labor. "There was a sort of force envelope around him that held his air. The ears were different, and the hair, and he had more than five fingers to the hand. . . . I think."

He turned on Barbour in sudden suspicion. "You don't think what we saw was an illusion, Frank? A projection of some kind?"

"I doubt that he'd go to the trouble," Barbour said slowly. "But it's

so hard to realize—"

"Power," Buehl burst out, astonishing them all until they saw that he had retreated to his own thoughts. "With such power, they can do anything."

It was Wilcox, who understood less of the wonder of it but whose problem was more personally immediate, who brought them back to reality.

"Man or not, he left us no better off," Wilcox said. "Do you remember what he said, commander?"

Clowdis' brain felt like an eye blinded by a light too powerful to bear, but he remembered.

"He suggested that we prove ourselves worthy of claiming the world we're reaching for."

"It wasn't a suggestion," Barbour corrected. "It had the sound of an order, Ed. And he said *worlds*."

"Power," Buehl muttered. He stared hungrily at fingers that twitched for the feel of bottle and glass.

The others sat lost in blank surmise.

"He as much as said we'd have a free hand out here if we can prove ourselves," Vesari said. "What scares me is that he didn't say what happens to us if we can't."

"Precisely," Barbour said. He ran a palm over his balding scalp and was surprised to find it damp. "If we can prove our worth. The problem is—*how?*"

They digested the issue in uneasy silence, facing it squarely for the first

time and marshaling up, each after his own nature, the possibilities of satisfying it.

Clowdis moved first, linking his conference-room screen with the control room. Shassil answered promptly, his goatish face blandly uncommunicative.

"Is every new race that develops space flight put to this test?" Clowdis asked. "And what happens if they fail, Shassil?"

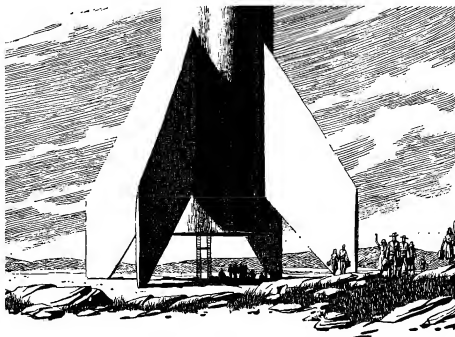
The Cetian shrugged oddly-jointed shoulders. "The T'sai have always sought out the new cultures. You are the first to the T'sai."

They looked at each other uncomprehendingly. To Barbour the information held a tantalizing hint of greatest significance, but he could not pin it down.

"Then the T'sai gave these other races their start," he said. "They must have—"

"Beside the point," Clowdis cut in. "What we want to know is this, Shassil: *What will the T'sai do if we fail?*"

The Cetian raised a hand to his own screen's control. "I do not know. The T'sai do not confide in the minor cultures, nor do we expect it."



The blanking out of the screen left them, Clowdis thought, precisely where they had begun. Barbour felt differently, but his nagging sense of significance concealed would not define itself for analysis.

"I'm out of my depth here," Wilcox said, and stood up. "With your permission, commander, I'll get back to my friends."

Clowdis hesitated, foreseeing a risk more immediate than T'sai action. The ship's crew, including himself, numbered seventeen, while below decks a hundred fifty colonists were already muttering uneasily among themselves.

If they panicked, any chance of survival was gone at the outset.

He considered holding Wilcox until some plan of action should be agreed upon, and dismissed the thought because he knew from experience that no leaderless body of men could be kept for long in uncertainty without demanding reassurance.

"Go ahead," Clowdis said. "But remember this, Wilcox—our chances of surviving this thing depend as much on yourself as on us. If you can't help us, then keep your people out of our hair."

When Wilcox had gone, Clowdis



and Vesari and Barbour looked at each other doubtfully in a silence broken only by Buehl's heavy breathing.

"Maybe they won't panic," Barbour said finally, without conviction. "Not one of them can have any accurate idea of what we're really up against here."

Clowdis shrugged helplessly. "Have we, Frank?"

Wilcox went directly below and found the colonists' bay astir with rumor and apprehension. Men converged upon him the instant he set foot in the long metal room, voices clamoring for reassurance.

Surprisingly, he found it in himself to give it to them. The role of leader had been thrust upon him against his will, but their obvious dependence upon him now lent him a strength he had not known he possessed.

"We're being delayed for examination," he told them. "A kind of immigration clearance we must pass before we can claim the Regulian planet we're bound for. There's no danger. Commander Clowdis has the situation under control."

But later, when the others had drifted away to talk in animated knots, Wilcox sat with his wife in their cramped cubicle and discovered that his specious assurance had deceived her not at all.

"You're holding back something, Carl," his wife said. She was younger

than Wilcox, in her late twenties, dark-haired and moderately pretty even in her emigrant's cheap and sober clothing. "They're going to turn us back, is that it?"

He shook his head helplessly. "I don't know, Alice. None of us knows, not even the commander. This T'sai looks like a man, but he's more like a god. There's no way of guessing what he may do if we fail to prove ourselves."

She tilted her head to look at him shrewdly, sensing with a perception clearer than his own something of the issues at stake behind their arrest in space.

"The T'sai never did this before. Carl, do you suppose they're going to judge the whole human race by this one shipload?"

He flinched from the thought. "I hope not! The responsibility—"

Inevitably the possibilities rose to chill him: themselves rejected, wiped out or driven back to Earth; other scheduled expeditions banned from space; men restricted forever, perhaps, to their own barren overcrowded little ring of worlds.

But as inevitably, because he was from birth a simple cog in a complex economic machine and as such was experienced only in his immediate circle of concerns, his thought went back to himself and his wife and their unborn child and to the other colonists who had burned their bridges to make this venture into space.

They could not go back. There was no place for them on Earth, and the colonies were bitter hells for outcasts worse off than slaves.

We may as well die out here, he told himself. The thought took root and fanned to flame the smoldering spark of resentment that had burned in him, unaware, from the beginning.

"We're only trying to *live*," he said aloud, and did not know that he spoke. "The T'sai have no right to deny us that. They've no use for that planet, or they'd have colonized it long ago. There's no reason why we shouldn't have it."

His wife put a hand on his arm and the touch brought him, as always, the warmth of more than physical support.

"I understand," she said. "I think the other colonists will understand too, Carl. If we can't settle out here, after sacrificing the little we had, there's no point in going on."

They sat quietly after that while resolve built up in Wilcox.

"I think I'd better tell the others the truth," he said finally. "We'll give Commander Clowdis and his group every chance, but if they can't come up with a solution—"

Clowdis and Barbour, sitting alone in the conference room when Wilcox came up again an hour later, had arrived at no sort of conclusion. Buehl had long ago given up a task for which he had no qualifications, and had gone

to his quarters for whiskey and Wagner. Vesari had followed suit from sheer weariness, and was at the moment sleeping the sleep of the unimaginative in his bunk.

"We're no better off than when you left," Barbour said irritably in answer to Wilcox's question. "There's a gulf between the T'sai psychology and our own that makes it impossible to guess what he wants. He's not a man, for all his likeness, and there's no knowing how his mind runs. It may be a matter of ethics, and the proof he demands may hinge on a facet of personality unfamiliar to us.

"Suppose one of our ancient Earthly aborigines had asked admission to our own society—he'd have had to pass an immigration board, and his ethical code would have had to correspond nearly enough to ours before he could be considered compatible. Suppose he came from a culture that ate human flesh—would that sort of conditioning be acceptable? It would not, and you know it. It would make him unfit for citizenship, and the fact that he understood nothing of that unfitness would not sway us for a minute in denying him."

"And if he tried forcible entry we'd deport or kill him," Clowdis added. He lit his hundredth cigarette and scowled at the colonist with strain-reddened eyes. "Frank is right, Wilcox. We've seen a dozen cultures at close range out here, and there's hardly a point of similarity between ourselves and any

of them. Don't you agree, Wilcox?"

Wilcox was a little surprised at his own steadiness when he said, "Surely we ought to know how long we're given to produce our proof. Have you asked Shassil?"

Clowdis and Barbour looked at each other in disgust.

"Out of the mouths of babes," Barbour said. Clowdis reached for the activator button that lit his conference-room screen.

Shassil's answer had less meaning to them at the moment than the empty expanse of foreign-body plate behind him.

"You have until sunset of the present day on the Regulian planet for which you were bound," the Cetian said. "Some twelve hours from this moment, by your time."

Clowdis ignored the information. "Where's the T'sai ship?"

"The T'sai has gone to confer with his council. He will return at the appointed time."

They looked at each other helplessly when the Cetian's screen went dark.

"Instantaneous transference," Clowdis said faintly. "Across the galaxy and back in twelve hours, with a conference thrown in. What's the use, Frank? Why don't we admit we're whipped?"

Barbour turned his hands palm up in silent defeat.

"But we've twelve hours to ourselves," Wilcox said. "We can reach Regulus in ten."

He went on defiantly when Clowdis whirled on him. "We're going to land on that planet, commander, if we die for it."

They had no chance to argue. At Wilcox's call three colonists came into the room with heat guns broken from the below-decks small-arms store, and as quickly as that the ship changed hands.

Shassil, with his unshakable air of galactic resignation, took the new order without a murmur. With a heat gun at his back he sat before the commander's control board and took over the handling of the ship as readily as if the Korivian craft with its T'sai passenger had never appeared.

Wilcox and his contingent, now that the die was cast, seemed relieved of strain and as resigned as the Cetian interpreter.

"I suppose you're right, sir," Wilcox said once when Clowdis cursed him for bringing annihilation upon them. "But we're probably slated for execution anyway, and we colonists would rather die here than go back to Earth and be shipped out to the domes on Mars or Venus or the Jovian moons. You've seen those installations yourself, and know what it's like there."

Clowdis did know. He knew, too, the bitter monotony of shuttling back and forth between those dreary hell-holes on the planetary runs he had followed before the advent of the interstellar drive freed him. Consider-

ing that the T'sai at best must have returned him to that drab routine awoke a certain sympathy in him for the colonists' stand, but failed utterly to compensate for the death he saw in the offing.

They brought Vesari up from his quarters, partly to check on Shassil's navigation and partly to keep Clowdis company, but Buehl they were forced to confine to his room. The power-master had rushed to the engine room the moment the atomics came to life, and in his bull-like fury had to be bound hand and foot to prevent his interfering with the engine-room crew.

Twelve hours could be a wonderfully brief time when it measured the span of a man's life, Clowdis thought. Yet the flight dragged interminably; the ship seemed not to be flashing at twice light-speed through space, but stalled straining and motionless. Seated with Barbour and Vesari on a spare acceleration couch, Clowdis relaxed for the first time in hours and found himself nodding with exhaustion before he realized the strain he had been under.

He slept the flight through. When he roused, it was to see the soft green sweep of the Regulian planet rising under the ship, horizons rushing up with sudden dizzying speed to change from convex to concave.

"We're landing," he said stupidly, blinking away sleep.

"As we set out from Earth to do," Wilcox agreed. His wife stood at his

elbow, her warm femininity startlingly out of place in the functionally male realm of control room, her eyes fixed on the clean sweep of hills and meadow below. "Let the T'sai come and blast us now if they like. We've begun what we came here for."

"Fools," Clowdis growled. "If you had to commit suicide, why didn't you bring the atomics up to critical mass and get it over with?"

But he thrilled a little nevertheless when the engines thundered in last-minute deceleration and the ship stood like a tall silver candle on the green plain.

"Now," Wilcox said. His voice trembled.

Someone opened the locks below decks, and Clowdis could feel the stale air of the ship drifting out and smell the clean fragrance of growing things stealing in to take its place.

"We'll give you back your ship," Wilcox said, "as soon as we can get our supplies and gear unloaded."

Clowdis looked at Barbour, who shook his head wonderingly.

"Men," Barbour said. "I've studied them for a lifetime, Ed, and I've never been further from understanding them."

But both of them, while they watched the colonists hastily passing out their meager possessions, felt an unexpected tug of envy.

"I think we've been to space too long, Ed," Barbour said when the last

colonist left the ship. "We've been too much interested in hunting out new worlds and investigating alien puzzles to appreciate our own species."

Clowdis, lacking the psychologist's trained capacity for empathy, still felt a shattering change of perspective.

He *had* been out of touch. He had forgotten the pull of men toward the soil, the drive that made men fight and die for possession of a few square yards of it. He and Barbour and Vesari were in their own way pioneers, latter-day Boones and Houstons and Carsons, cramped when they saw the figurative smoke of other human occupation. To them in large measure was due the credit for man's early leaping across the spatial frontier, but now, as always, it was the settlers who carried with them the dogged unyielding spirit of humanity. Those poor idealistic fools going to their deaths out there were of the same breed that had slogged patiently in the steps of all pioneers, to hold the conquered land in perpetuity for their children and their children's children forever.

But not this time, Clowdis thought. *The T'sai—*

Wilcox appeared briefly upon the trampled grass below, turning a flushed face up to Clowdis and Barbour at the open port.

"You'd better take the ship away, commander," he called. "The deadline—"

Clowdis threw a glance toward the

sunset washing the low hills to the west, and flinched when the T'sai ship sprang into view and blocked out the sun. His immediate reaction, curiously, was not the belated panic he had anticipated but a blast of red anger against the T'sai.

"Damned if I'll try to lift her now," he said.

Then, before Barbour could move to prevent, he dropped down the personnel ladder to stand where Wilcox had stood.

"Here we are," he shouted. He shook his fist at the lowering ship. "Blast the lot of us and be—"

The T'sai appeared beside him like a solid projection that denied transit time, tiny face inscrutable behind his force field.

"Watch," the T'sai said.

The alien ship grounded, feather-soft, on the grass. Korivian police marched out upon the meadow like orderly ranks of reddish reptilian automats and bore down on the huddled colonists. Clowdis caught the glint of late sunlight on enigmatic weapons, and stiffened with a sick chill of horror when he saw that the few colonists who had clung to their commandeered heat guns had aligned themselves before the rest.

He saw Wilcox in the forefront, keeping his wife behind him so that his body shielded her own. Her own and the other life not due for half a year, the unborn son or daughter they

had confidently expected to inherit their share of the new Earth.

The T'sai raised a hand and the Korivians stopped like snouted statuary.

The colonists shifted uneasily and stilled. For a moment the tableau held fast in static suspense, a dragging eternity in which Clowdis forgot to breathe.

Then the Korivians turned as if on prearranged signal and marched back to their ship.

"The proof is sufficient," the T'sai said. His voice, amplified without apparent mechanism, carried the length of the meadow. "The world is yours."

And left them alone with their victory.

The ship did not lift that night. Clowdis got roaring drunk with Barbour and Vesari and Buehl on the powermaster's whiskey, and put off questioning Shassil until late the next day.

The Cetian made explanation when they were sober, his lucid monologue falling with clear logic even upon their dulled minds.

"The T'sai ruled the galaxy," Shassil said, "before the first life crawled up from the sea on your world. They ruled because they, of us all, possessed both intelligence and initiative, the

restless drive toward perfection that was somehow left out of the lesser races. The T'sai sought us out one by one and helped us up the long path to self-sufficiency, but they had despaired of finding another race with purpose like their own until you appeared.

"They watched over you from the beginning, but without interfering; if your species was to prove itself worthy it would find its way to the T'sai when the time was right, and the T'sai would weigh it and pronounce judgment. You passed their test because your kind possesses the same initiative and idealism that made the T'sai what they are, the loyalty and belligerence necessary to make you their proper successors."

They stared at him unbelievably. "Successors?" Clowdis repeated. "What—"

"The T'sai have grown old in fulfilling their obligations to the rest of the galaxy," the Cetian said. "And a renewal of lost racial virility depends upon their finding new fields to explore. Other galaxies are waiting for them, as this one waited for you. The T'sai will go when you are ready to step into their place."

And in leaving their presence Shassil, for the first time, touched his goatish beard in respect.

THE END

ACHILLES AND THE TORTOISE

BY GOTTHARD GUNTHER

From a philosophy a science is derived; from a science, an engineering system can be deduced. From engineering come the blueprints, and the machine-shop directions. And the philosophy of present-day science, summated in Einstein's relativity, cannot lead to the interstellar cruiser. But another philosophy . . . ?

Part 3

In the pioneer days of wireless telegraphy the wife of one of the scientists engaged in developing the new invention was asked by her friends whether she could explain to them what her husband was doing. "Of course," she said, "my husband explained it to me just yesterday. Imagine a very long dog. His forelegs are in Washington when his hindlegs are still in New York. If you pinch this dog in New York, he will bark in Washington. Wireless telegraphy is exactly the same—but without dog."

Something similar could be said about interstellar space-travel. It will be space-travel all right—but without space. This seems to be a rather asinine statement. Nevertheless, we shall see

later on that it expresses, in a somewhat cryptic fashion, the very secret of a possible space-travel technique.

We learned in Part 2 of "Achilles and the Tortoise" that neither Space nor Time are absolute data of our scientific experience, and that they exist only in an interdependent relation with Matter. But so far we have not yet discussed Matter. Well, what is Matter? Ancient Greek philosophy had an answer. One of its outstanding representatives (Democritus) said that Matter is the accumulation of tiny indivisible particles of an eternal and indestructible substance. All objects and phenomena of Nature can be explained by quantitative changes in the accumulations and configurations of these particles. This is the early theory of atoms. It has influenced

scientific development for more than two thousand years. Recently, however, this theory has been modified, and modified to such an extent that the original idea is hardly recognizable. There are elementary particles, yes, but—there is something else as well. And, if somebody tells you that these particles are no particles at all, you won't be able to contradict him.

At first sight the situation looks rather confusing, but this is only due to the fact that we are momentarily caught in a transition period where we are passing from Democritus' idea of absolute atoms and absolute Matter to the very novel discovery that Matter is as relative as Space, Time, color, motion et cetera. Just the same, in order to find out something about the modern concept of Matter the theory of elementary particles is still a good starting point. The following table enumerates the particles which were known to physics up to the year 1953, and also shows us some of their properties:

Name	Charge	Mass	Lifetime	Decay scheme	Spin
Graviton	0	0	stable	no	2
Photon	0	0	stable	no	1
.....					
Neutrino	0	0	stable	no	$\frac{1}{2}$
Electron	-	1	stable	no	$\frac{1}{2}$
Positron	+	1	stable	no	$\frac{1}{2}$
.....					
Meson - Group	0, -, +	210- 1400	not stable	yes	mostly unknown
.....					
Proton	+	1836	stable	no	$\frac{1}{2}$
Neutron	0	1838.5	750 sec	yes	$\frac{1}{2}$
Neut. V.Part.	0	2190	not stable	yes	?
Pos. V.Part.	+	2200	not stable	yes	?

We are rather certain that this table is not exhaustive. According to present theory there should be an "anti-proton." It is also improbable that the Meson-group is complete with its eleven members. If the present system of counting particles is retained, a final table might enumerate twenty-seven or twenty-nine particles. But this is just a hypothesis.

However, these particles do not have the properties Democritus ascribed to them. Perhaps the best way to define them is to say, that each particle represents a "localized" manifestation of a quantum field. Each quantum field, on the other hand, fills the whole of Space and Time of our present Universe. But there is a difference between these fields. Only the gravitational and the electromagnetic field are genuine long-range fields. All the others are extremely short-ranged in their observable effects. It might be said with a certain modicum of truth that the first two fields represent—partly at least—the long-range behavior of the short-range quantum fields. The gravitational and the electromagnetic field are, therefore, called the classical fields.

This abolishes completely the concept of empty Space. It looks as if Space is physically real only as an extension of the quantum fields beyond the existence of "solid" matter. This also implies that distance is a quantized property, produced by gradual accumulation of space-quants.

And what goes for Space should have its analogy in Time. There is no experimental proof yet, but it is perfectly safe to predict that there is also a smallest physical unit length of Time, an irreducible time-quant. The concept of the quant, first discovered to be a property of Matter in its fluid state as energy (Planck), is undoubtedly the general criterion of whether something is measurable or not. Space, Time and Matter—as far as they have measurable properties—are quantized. But, as far as they do not represent an accumulation of quants, they are not measurable. And what is not measurable does not exist—scientifically speaking. Or does it? Well, the equivalence between physical existence and measurability is certainly true for classical physics, but we shall obtain a very different—and most unexpected answer if we couch the available information in terms of quantum physics.

However, before I attempt to formulate the quantum-physical answer—which, incidentally, will lead us straight down the road to the problem of space-travel—permit me to recapitulate the salient features of our problem:

1) We learn from Cantor's theory of Alephs that the concept of shorter or longer distance—or interval—is arithmetically meaningless in the continuum.

2) We also know from the solution

of Zeno's paradox that the phenomenon of motion is independent of the number of physical—denumerable—space-quants a moving body transverses. Achilles passes in the same time as many real points, but more space-quants than the tortoise.

3) The Michelson-Morley experiment implies that absolute Space and absolute Time are abstract relations but not physical realities.

4) The quantum field theory informs us, that the basic substratum of all physical existence are a limited number of quantum fields, each with the characteristic of extending over all of Space and through all of Time.*

With the help of arguments (1) and (2) the theoretical feasibility of interstellar and even intergalactic space-travel can be demonstrated. I shall show this by first analyzing the significance of these arguments. Achilles is capable of traveling, within the same time, a longer distance than the animal because by doing so he passes no more and no less real—non-denumerable—points than his competitor. Zeno assumed for the sake of simplicity that our hero travels exactly twice as far as the animal. But from what we know about the absolute equivalence of shorter and longer distances in terms of the transfinite number c [cf. argument (1)] Zeno's point would also be valid if his fast runner

* However, it should not be forgotten that this concept of Time refers only to the temporal duration of our *present* Universe, where T is now of the approximate order of magnitude of 3.10^{11} sec.

would travel a quintillion times as far as the slow one. The ratio of the distances is irrelevant. We therefore ask: What makes Achilles overtake the tortoise? The answer is trivial: He uses longer legs, and by doing so, he compensates for the fact that he has to pass more space-quants than his opponent.

I'm afraid we should need awfully long legs to step from here to the Andromeda Nebula. Achilles' personal method is not very practical for interstellar distances. But his example demonstrates a general principle. Distance *per se* does not mean a thing! The traversing of distance is "purely a matter of operational method" (Campbell). We have not yet reached the stars, because we use an extremely limited operational procedure for locomotion—a general procedure, by the way, which includes everything from the crawling of a toddler to the flight of a jet plane or a rocket.

Our question is: Is there a basically different type of operational method? A method more adequate to traverse cosmic distances? The answer is Yes, and it is implied by arguments (3) and (4).

If you have various forms of locomotion, some slower and some faster, but all unsatisfactory for a certain purpose, you may ask: What is their common characteristic which makes them all so inadequate? The answer in our case is simple. The toddler, the tortoise, Achilles or the jet plane, they

all try to cover distances by passing space-quants. But in terms of space-quants there are always shorter and longer distances, and no matter *how* good your operational method is, there always comes a point where the number of space-quants becomes too much for your technique. And viewed from the order of magnitude of galactic distances there is hardly any difference in speed between the toddler and the jet. Both are equally outclassed in the race for the stars.

The point, therefore, is, can we envisage an operational method of locomotion which does not try to cover distances in terms of space-quants? Because as long as we do so we have to distinguish between shorter and longer distances. Arguments (3) and (4) suggest that there should be such novel method. Let us find out, therefore, what these arguments really signify concerning the possibility of interstellar travel. According to (3) absolute, empty Space does not exist in a strict physical sense. Consequently, absolute distances do not exist either. What does exist is "spatiality" (Einstein) as a measurable property of matter-in-general, i.e. of all physical states of Nature. So the "absolute" distance between us and, let us say, the Andromeda Nebula, which has so far made it impossible for us to visit that distant galaxy, is not absolutely real. It is only relatively real with regard to our toddler-locomotion, and it would disappear at

once if we were to discover the proper operational technique to deal with such distances.

At this point I imagine I hear some of my readers mutter: "This sounds fishy! Even apart from the problem of space-flight we know there is a stupendous remoteness between us and a distant galaxy." Surely, there is! But the point is: Do we have to interpret it in terms of spatial distance? A trip to the Andromeda Nebula performed with the velocity of light would take approximately two million years—terrestrial time. There is nothing which could prevent our saying: There is a temporal interval between us and this galaxy. Our space-vessel rests motionless in Space, but a time interval of two million years will affect the immediate proximity of the Andromeda galaxy. Motion relative to empty Space is not observable! Motion relative to eventless Time is not observable either. It follows with inexorable logic that the two statements: I travel from here to the next galaxy through Space or—exclusively—through Time are absolutely equivalent. For, if I travel through Space with the velocity of light, my clocks will slow down to an absolute standstill.

Obviously, Space and Time are interchangeable entities. But they are interchangeable only on the basis of Matter. When I said, we travel from here to the next galaxy two million

years through Time but not through Space, I measured time outside the spaceship. When I stated that we travel the same way exclusively through Space and not through Time the latter was measured by the clocks of the ship. The difference *between the two sets of clocks is a material condition!* But this means there are *three* interconnected interpretations by which the mutual relations of Earth and Andromeda Nebula may be defined. We may say:

There is a time interval (T) between the two

There is a spatial distance (S) between the two

There is a material gradient (M) between the two

We discovered that (T) and (S) were interchangeable, provided the material gradient (M) was represented by a constant. This constant is the velocity of light. It was assumed that our ship was traveling with that velocity.

In fact, we are quite accustomed to the interchangeability of the three cosmic components of the Universe in our daily lives! But we never think about it, and we fail, therefore, to notice the general significance of the most familiar phenomena.

In the preceding article* I compared the Michelson-Morley ether-drift experiment with the situation of two cars traveling on a highway, and I stated that the difference in results as to the relative velocity of moving ob-

* cf Astounding, August 1954 p. 96.

jects was due to the fact that in the case of the two cars there existed an "absolute" constant: the highway. Now, everybody who has ever driven a car knows that his locomotion is subject to the following laws:

$$\frac{S}{M} = T, \quad \frac{S}{T} = M, \quad T \cdot M = S$$

(where T = time interval, S = spatial distance, M = velocity = material gradient).

In the case of our highway travel (S) is always a constant, let us say, the distance between New York and Chicago. (S) is basic and cannot be changed. But (T) and (M) are variable, and to a certain degree interchangeable. We know from our experience that we can reduce the value of (T) by increasing the value of (M). In plain language: If we spend more gasoline, rubber, oil et cetera (M) we can save on time (T). But, if we want to be economical with our engine, tires and fuel, we must pay for it in terms of longer duration. There are, of course, practical as well as theoretical limits to this experiment. Don't forget, not all traffic cops read Astounding, and are ready to accept our argument that we are only testing space-travel theories as a novel excuse for speeding.

There is, in fact, a very fundamental limitation to the operational procedure which affects the interchange between (T) and (M). This classical procedure can never be good enough to make one of the two components disappear

completely, because in this case the value of the other would become infinite. But just the same, even the primitive level of terrestrial locomotion permits us to study the basic interchange-relation of (T) and (M) with (S) being an "absolute" constant.

In the case of the Michelson-Morley experiment the interchange-relation of the cosmic components is calculated on a different basis. This time the absolute constant is (M), the material factor, and (M) is represented by the most general property of Matter, the velocity of electromagnetic waves. Consequently we are entitled to expect in this case an interchange-relation between (T) and (S). This is indeed confirmed by the transformation equations of H. A. Lorentz:

$$t' = \frac{t - \frac{v}{c^2} \cdot x}{\sqrt{1 - \frac{v^2}{c^2}}}$$

and

$$x' = \frac{x - vt}{\sqrt{1 - \frac{v^2}{c^2}}}$$

If we have two systems K and K' being in rectilinear uniform motion relative to each other, then the follow-

ing relation exists between temporal intervals (T) and spatial distances (S)—according to Einstein's interpretation of the formulas*: The faster K moves relative to K', the longer will be the time interval transferred from one to the other system, and the shorter will be the spatial distance in the same transfer. At the same ratio as time grows, Space tends to disappear. And vice versa. The basis of this Space-Time interchange-relation is mass or Matter, because at the velocity of light the increase in mass for any moving body becomes infinite.

So far we have obtained two very important results! If we use spatial distance (S) as a basis, we obtain an interchange-relation

$$T \longleftrightarrow M \quad (1)$$

If Matter (M) is considered to be the constant we find that

$$S \longleftrightarrow T \quad (2)$$

holds. Having arrived at this point we can no more evade the question: Is there a third interchange-relation where (T) is the basic constant? My answer is a very positive Yes. There must be a third exchange-relation

$$M \longleftrightarrow S \quad (3)$$

because the mutual interdependence of (S), (M) and (T) is such that the first two interchange relations could never exist unless a third between (M)

* In these equations v represents the velocity of K relative to K', c is the constant of light, x indicates the movement along the x-axis, and t represents time.

and (S) would balance them. (We shall later demonstrate this in terms of symbolic logic.)

Interchange-relation (3) is the most interesting for us. We know (1) only to the limited extent of our daily experience in terrestrial travel. (2) Is at the moment a purely metric problem between the two continua Space and Time. But (3) represents the very core of modern quantum-mechanical physics. It is becoming more and more difficult nowadays to draw a distinctive line between what is purely "spatial" and what is "material" in any physical datum. The borderline between Space and Matter shows a sharp demarcation in classical physics only. It tends to disappear under the "boundary" conditions of microphysics as well as of astrophysics. It is only in the intermediate field of "terrestrial" macrophysics that we *seem* to know with some certainty what the difference between empty Space and solid Matter amounts to. In popular language: It is the difference between something and nothing. Matter is the sum total of "all things," and empty Space is the total absence of things. Every child can understand this. But not too long ago a most important formula was discovered: (Einstein)

$$E = m.c^2$$

(where E = the energy of a body at rest, m = its mass and c = velocity of light). Since then it has become general knowledge that "solid matter" (mass) may be transformed into en-

ergy (atom bomb), and that it is at least theoretically possible to re-transform radiant energy (light) into Matter. Does our distinction between *Something* and *Nothing* still hold? Is energy a thing? We are told that Matter is an electromagnetic phenomenon. But the electromagnetic field extends through all of Space. Space itself appears to be a field-phenomenon. That means, microphysically speaking, it becomes more and more impossible to draw a sharp line of demarcation between a thing and the space that surrounds it.

An analogous intimate relation between Space and Matter exists in macrocosmic physics. A preliminary remark: Imagine you have a box partly filled with marbles. You take one after the other of these marbles out of the container till there is nothing left *inside*. Nobody will doubt that there is one thing left. That is the empty box. Its capacity of being a container has not been affected by the removal of the contents. This idea of the relation between Space and its contents is that of classical macrophysics. But now let us proceed to macrocosmic physics.

Imagine yourself to be an entity with divine power, and located outside the Universe. You reach into the Universe and remove from it one galaxy and one nebula after the other, and you continue to do so till nothing material, not even the smallest meteorite or the most tenuous wisp of

cosmic dust is left in the Universe. According to common sense two "objects" should then be left: the empty Space waiting to be filled again with things, and empty Time waiting for the event of a new creation. Common sense tells us further that the dimensions of our Universe should not be affected by the removal of Matter and of events. But common sense has failed us once before when we dealt with Cantor's theory of transfinite number, and it will fail us again in macrocosmic physics.

We shall throw only a fleeting glance at what happens to Time in a Universe deprived of all Matter. In our present Universe Time has two directions. It stretches toward the past as well as toward the future. But in an empty Universe Time would have only one direction—toward the future. A past would not exist. The possibility of "passing" Time demands the presence of Matter.

But what about Space? Some time ago the English physicist Sir Arthur Eddington tried to define the interdependency of Space and Matter in certain equations—in a somewhat similar way as the Maxwell-Hertz field theory connects the electromagnetic fields with charges or poles. Eddington's equations permitted two interpretations which became known as the Einstein- and the de Sitter-universe. Einstein's universe is "static"; de Sitter's is in constant expansion—

and contains no Matter! Consider what that means! A space that "contains no matter" but is in constant expansion is Matter in some state of radiant energy. It was later discovered (Friedmann, Lemaitre, Robertson) that Eddington's equations allow of a series of solutions which define a connection between the extremes of the Einstein- and the de Sitter-universe.

The gist of the theory can be described as follows: If you put some Matter into the de Sitter-universe, then its gravitational energy will start to counteract the expansion. The expanding world will start to slow up. If you add more and more material, you will finally arrive at a point where expansional and gravitational forces balance each other. This is the static world of Einstein. But if you add even more Matter, then gravitation becomes stronger than expansion, and the Universe will start to shrink.

It seems as if Matter has a "contracting" effect on Space, and a corresponding influence on the structure of Time. As far as Space is concerned one of the ways to describe its relation to Matter is represented by the formula:

$$\frac{KM}{c^2} = \frac{1}{2} \pi R \quad (5)$$

(κ = gravitational constant; M = mass of Universe; c = velocity of light; π = ratio of circumference to diam-

eter; R = radius of curvature.)

As (5) is at present a highly speculative formula I shall not deal in detail with it. But, even if it is only a rough approximation of the truth, it clearly implies that distance is a field-effect. By increasing or decreasing this effect spatial distances can be shortened or made longer. This seems probable anyhow. But distances in our universe are so enormous that even a considerable reduction of spatial dimensions would not help us much. What would be the use of pulling a galaxy which is about one billion light-years away into our immediate "neighborhood" of fifty million parsecs. Moreover, we would need the energy of millions or billions of galaxies to do it. The very idea is the height of absurdity.

Fortunately our basic interchange-relations (1), (2) and (3) suggest something else. Some way back in these articles I stated that Space and Time are continua; but Matter has a discontinuous structure it is quantized. Then a very confusing thing happened: We found out that Space was quantized too, when we traveled through it. Zeno's paradox was produced by the conflict between denumerable (quantized) and nondenumerable numbers. How did that happen? The answer is simple: All classical forms of motion demand a partial "materialization" of Space. We travel through Space by means of a highway, for instance. And a highway, representing distance, as a functional part of an act of locomotion,

tion, is materialized space. And distance in form of a highway is, of course, quantized. For the airplane our atmosphere plays the corresponding part. And even the principle of rocket propulsion—which may suffice for the short hop to the Moon—is still based on the idea of quantized motion. It is only a little more sophisticated—you take your “highway” along with you. This time it is your rocket tubes.

But this convertibility of the spatial continuum into quantized material existence is only possible if there is a reversed process by which quantized material distance can be converted into a non-quantized state of continuity. We have at the moment not yet the slightest idea how this can be managed. Nevertheless we know two things with absolute certainty. We know that there can be no doubt that this inverse convertibility from quantized into non-quantized existence does exist. Because our three interchange-relations

$$T \longleftrightarrow M$$

$$S \longleftrightarrow T$$

$$M \longleftrightarrow S$$

would not be possible if only Space could turn up as a quantized form of Matter, but Matter never as a spatial continuum. Matter *has* spatial extension in quantized form; nobody ever doubted it. Our whole technology is based on that knowledge. But, if the inverse relation between Matter and Space did *not* exist we would have to

assume that Matter—and with it Time—would constitute absolute data of nature. No modern scientist is ready to make this concession.

The other thing we know with equal certainty is that in a technology no longer based on the discreteness of Matter but on the continuity of Space and Time distance goes by the boards. There is no longer any question of shorter or longer distances. They disappear completely. A line segment one billionth part of a millimeter long is numerically equivalent to a line segment of any trans-cosmic length.

Only a “little” question is now left. How can we develop a technique of locomotion which does no more use Space in its quantized material aspect, but which utilizes Matter in its non-quantized spatial version? We are fortunate in so far as we are not totally ignorant in this respect. We have at least some negative knowledge—we are aware of the data that are missing. First: We shall have to discover the law which describes the physical interaction between the electromagnetic and the gravitational field. We need, further, detailed information about the cosmic “glue” that holds the atomic nucleus together (Meson theory).

One scientist (H. Bethe) has recently expressed the opinion that we need more powerful mathematical tools to tackle the problem of the nucleus. It may well be that Cantor's theory of non-denumerable sets will

finally provide the answer. It should not be forgotten that Cantor only discovered the *existence* of transfinite numbers. How to use them in physical science is still a mystery to us. In the preceding article I could only show that non-denumerable sets do apply to the problem of motion in Space, and that their application demonstrates that distance is a property of quantized Matter but not of a continuum like Space or Time.

Thus these articles on the problem of interstellar and intergalactic space-flight would have to conclude on a very unsatisfactory negative note, if it were not for a recent discovery in the field of applied symbolic logic. We are now well acquainted with the fact that symbolic logic can be used in analyzing electrical circuits and power patterns. I shall use this technique in order to demonstrate the basic power pattern all interstellar spaceships will have to apply. I know, of course, nothing about the details which will depend entirely on as yet unknown operational procedures of electromagnetic, gravitic, and mesonic character, but I know by logical analysis that they will have to conform to the following structural pattern.

"M," "S" and "T" shall again be the symbols representing our three cosmic components of the Universe. Their interchange-relation shall be represented by \longleftrightarrow' , \longleftrightarrow'' , and \longleftrightarrow''' respectively. We then obtain

three elementary principles of interchange:

\longleftrightarrow'		\longleftrightarrow''		\longleftrightarrow'''	
M	S	S	T	T	M
S	M	T	S	M	T

We know, on the other hand, that any physical event involves all three cosmic components; because it is physical, and it happens in Space as well as in Time. That means: No isolated interchange relation of \longleftrightarrow , \longleftrightarrow' , or \longleftrightarrow'' ever happens in the Universe. We, therefore, introduce

two operational procedures: \rightarrow and \leftarrow with the intent to combine all three interchange-relations. The choice of these two procedures is by no means arbitrary. In fact they are the only possible operations, if we want to combine all three interchange-relations. We shall define \rightarrow as the combination of the upper line of all three relations of \longleftrightarrow ; that means in this case: of M to S, S to T and T to M.

The second operation, \leftarrow , will accordingly combine the lower line of \longleftrightarrow relations.*

In order to establish our operational procedures \rightarrow and \leftarrow we arrange the cosmic components M, S

* A combination of a \longleftrightarrow relation of the upper line with one of the lower line is not possible because it would involve our operational procedures into contradictions. An example may demonstrate this. If we combine M to S with T to S in one operation, we lose the distinction between M and T, and the \longleftrightarrow''' relation becomes nonexistent. Because, if M is changing into S, it cannot also change into T within the same operational procedure. The same holds for T.

and T in all possible combinations in two horizontal lines X and Y. We then look for the values of \rightarrow in the upper lines of our \leftrightarrow , \leftrightarrow'' and \leftrightarrow''' tables, and we always take the *second* value. Thus, if our two horizontal lines contain the combination M S

or we choose the value S from S M

\leftrightarrow' table. If the combination is $\begin{matrix} S \\ T \end{matrix}$

or $\begin{matrix} T \\ S \end{matrix}$ we choose again the second value of the upper line, this time of \leftrightarrow'' . Accordingly our value must be T, and

so on. For \leftarrow op we select the *second* values of the lower line of the \leftrightarrow tables. We thus obtain as definitions of the operations \rightarrow op and \leftarrow op the following table:

X	M	M	M	S	S	S	T	T	T
Y	M	S	T	M	S	T	M	S	T
\rightarrow X op Y	M	S	M	S	S	T	M	T	T
\leftarrow X op Y	M	M	T	M	S	S	T	S	T

This arrangement may seem redundant to the uninitiated. But it is not. As a basis for further calculations we need all logically possible combinations, even such seemingly redundant ones as between M and M, S and S, T and T.

One thing is absolutely certain—no matter how interstellar and intergalactic space-flight is finally achieved,

and what detailed technical arrangements may be used—all future spaceships capable of traveling cosmic distances will have a switchboard based on the two operational patterns of \rightarrow op and \leftarrow op. The interesting point, of course, is what could be done with it. Well, many things. It is impossible to predict which of the individual technical procedures that fall into the

\rightarrow \leftarrow pattern of op and op will finally be used. This depends entirely on what future discoveries will be made in nuclear and astrophysics. But we might as well—for the sake of the practical demonstration of our “switchboard”—assume that the description of interstellar flight, given by one of our outstanding s.f. authors is approximately correct. Permit me to quote this description from one of Isaac Asimov's novels, where one of the officers of a spaceship explains the principles of interstellar flight to the passengers: *

“Ladies and gentlemen! We are ready for our first Jump . . . The Jump is exactly what the name implies. In the fabric of space-time itself, it is impossible to travel faster than the speed of light . . . Therefore one leaves the space-time fabric to enter the little-known realm of hyperspace, where time and distance have no meaning. It is like traveling across a narrow isthmus to pass from one

*cf. Isaac Asimov, *The Stars, Like Dust*. N. Y. 1951 (Doubleday) pp. 39/40.

ocean to another, rather than remaining at sea and circling a continent to accomplish the same distance.

"Great amounts of energy are required, of course, to enter this 'space within space' as some call it, and a great deal of ingenious calculation must be made to insure re-entry into ordinary space-time at the proper point. The result of the expenditure of this energy and intelligence is that immense distances can be transversed in zero time. It is only the Jump which makes interstellar travel possible."

Asimov like many other s.f. writers sees quite clearly that the possibility of space-travel depends on the elimination of spatial distance. We know now that distance must be interpreted as an accumulation of space-quants, and we travel distances by passing space-quants. I remarked in Part 2 of this series: No matter *how* good our travel methods might become, there is always a critical point where the accumulated number of space-quants becomes too much for our operational methods. The question, therefore, is: Will it be possible to devise a technique of locomotion where we "jump," as Asimov says. In other words: Where we do not pass space-quants when we cover distance.

We know that what is quantized is the M-factor in the Universe. Neither Time nor Space, being genuine continua, are quantized *per se*. It is only their matter-aspect that gives them

a quantized structure. It all boils down to the problem: Can we get rid of the M-factor in our operations
 \rightarrow \leftarrow
 op and op. Our highway experience has already taught us that M and T might be traded against each other—at least to a limited degree. The same applies to S and T. But if there is general convertibility of all three cosmic components into each other, it should indeed be possible to eliminate one of the components operationally. Asimov's description suggests that the M-component should disappear, because it is the matter-factor that produces distance.

There is a very simple procedure by which the quantized M-factor can be eliminated. For $X \rightarrow Y$ it is expressed by the formula:

$$(X \overset{\rightarrow}{\text{op}} Y) \overset{\rightarrow}{\text{op}} \longleftrightarrow (X \overset{\rightarrow}{\text{op}} Y) \quad (6)$$

By using (6) we transform our original
 \rightarrow
 sequence for $X \rightarrow Y$

M S M S S T M T T

into the M-free sequence *

S S S S S T S T T

This new series which contains only S and T represents the symbolic meaning of (6): However, we are more interested in its practical significance for interstellar travel. Seen from this

*The transformation effected in (6) is quite elementary. It is done in two steps. First the interchange-relation is applied to $X \rightarrow Y$. That means: wherever $X \rightarrow Y$ has the value M it is changed to S, and where there is an S it is replaced by M. Then the procedure op which was originally operative only between X and Y is applied between the established values of $X \rightarrow Y$ and the interchanged values of $(X \rightarrow Y)$.

angle, (6) describes the basic logical pattern of a technical operation which has ceased to use quantized data. We remember that quantized data are always represented by M. But (6) does no longer contain an M-factor. (Incidentally, (6) does *not* mean that Matter *per se* has been eliminated, but only its basic feature of quantization.) It follows that the mathematical theory of (6) is not based on denumerable arithmetics. Instead, it uses transfinite Cantorian numbers. And we remember that the concept of distance disappears entirely in transfinite arithmetics. In other words, (6) describes the energy pattern of a technical operation which eliminates distance.

It can be said with absolute certainty that (6), its corresponding formula for the inverse operation

←
X op Y,

← ← ←
(X op Y) op ↔''' (X op Y) (7)
or any other expression of the types (6) and (7) will be the basic formulas of all future interstellar or even intergalactic space-travel—provided, of course, that our general assumption of the universal convertibility of Space, Time and Matter is correct. If it isn't, we might as well say good-bye to all our dreams of space-travel outside our solar system. The distances are too great. The idea of interstellar voyages where space vessels travel for centuries, and where only the great-grand children of the original travelers arrive, is perfectly absurd. Interstellar

and intergalactic space-travel will become a reasonable proposition only if we develop a technique which makes distance go by the boards—entirely. This, however, is absolutely predicated on the assumption of the primordial interchangeability of the three cosmic components of the Universe, and the additional assumption that one may be substituted by the other.

There are two components which are continua, and one which is quantized. Length of distance or length of interval means nothing in the continuum. It is significant only for the third (quantized) component. If we are capable of developing a technique which eliminates the quantized component by substituting non-quantized features, our problem how to cross the voids of Space is solved. Our formulas (6) and (7) demonstrate that such a technique is *logically* possible. What (6) and (7) imply *practically* can be put down in very simple words. Everything that exists has *three* components. The three *natural* components of the Universe are M, S and T. But if Man introduces an *artificial* state of existence he likewise needs three components only. But, being artificial, this state of existence is based on an operation "op"—which, in its turn, acts as a *basic component*.

→ ←
Thus—introducing P for op and op—we have now four equally fundamental parameters:

P—M—S—T

This adds up to a redundancy, as far as human technique is concerned. We may omit one of the four components—or rather its properties. If we get rid of P, we have the Universe just as it is without Man's action. Of course, P is still there as far as the objective world is concerned but it is *distributed* over MST. Process (P) appears in this case only as a natural event like the falling of rain, lightning, hunger, thirst, et cetera. But, if we introduce an independent parameter P as a fourth degree of freedom for action, we add human creative procedure to the natural events—as a means of producing something which has not existed before. In our special case—space-flight. But the addition of P permits us to eliminate the properties of one of the other components by substitution. Our formulas (6) and (7) did this for the pattern:

$$P-S-T$$

This is possible because all human technique and action is *two-valued*. In order to do something we require operational decisions and two alternative poles to decide between. Nothing else! Therefore, the pattern PMST is always redundant—as far as any individual technical procedure is concerned. M (or the properties of M) can be substituted as well as S, T or P.

However, this redundancy concerns only any practical, i.e. limited, action or procedure, and *not* the general rational pattern on which our procedure is based. That is the reason why we

cannot be satisfied that science, as it is known today, recognizes only three parameters of the Real:

the objective parameter—Matter (M)
the dimensional parameter—Space (S)
the relational parameter—Time (T)
It is necessary to add a fourth cosmical component:
the operational parameter—Process (P)

As long as we refuse to accept P as an independent parameter we can only build a technique based on the natural laws inherent in the relations between M, S and T. In this case we will never reach the stars. The velocity of light as upper limit for the propagation of physical events in space is such a natural law. And mind you, it will *never* be invalidated in a MST-universe. On the other hand, if we add a fourth parameter we gain a technical dimension in which the laws of a three-parameter-world are not abolished but capable of—modulation.

I started my "Achilles And The Tortoise" series with an analysis of the problem of motion, as first conceived by Zeno. Permit me, therefore, to conclude this final installment with a confrontation between the theory of motion in a three-and a four-parameter-universe. According to classical principles the phenomenon in question is based on the formulas: $S/M = T$, $S/T = M$, $MT = S$. These are expressions of basic laws in a three-parameter-universe (MST). Of course, P is also present in these three for-

mulas, but as I remarked before, it is distributed over the other parameters, and, therefore, has no quotable value as an independent component. This situation is unavoidable in classical science.

This science can never provide us with an adequate theory of interstellar space-flight because the *distributed* P cannot absorb the quantized character of M. And nothing can be done about it because in a MST-universe P can never be taken out of its distribution. Why not? Well, according to our traditional ideas Matter is *Something* and empty Space and eventless Time are *Nothing*. But what is Process (P)? A very embarrassing question! It certainly is nothing! But is it a thing? No, we cannot admit that either. The science we know uses a strictly two-valued logic. In other words, there can be no basic Third between *Something* and *Nothing*. In this system there is no room for an independent P. Consequently the only method to find an asylum for the fourth parameter was its distribution over the other components.

Now we have finally discovered the original source of Zeno's trouble: He could not define motion because it was neither a thing nor a no-thing. Motion is an event or process. To put it differ-

ently: Zeno's and our analysis of motion showed that this phenomenon could not be defined in terms of M, S and T. It demonstrated properties beyond the three-parameter reality of our traditional idea of Nature. We, therefore, introduced a fourth parameter P. This was done arithmetically by using Cantor's transfinite number c for the solution of Zeno's Paradox. This provides us with a new interpretation of Cantorian transfinite sets. Cantor's Alephs are numbers which do not apply to a three-parameter-universe. They represent the arithmetical order of the fourth parameter. This gives us—this is at least the hope of the present writer—a “satisfactory correlation of Cantor's ideas with the real universe” (Campbell).

The recognition of Process (P) as a new parameter beside Matter, Space and Time is equivalent to introducing in experiential terms that so-much-talked-about “fourth-dimension” *through which the first three can be rotated at will*. This method permits the substitution of the properties of one parameter by those of the three others. The development of a physical science which satisfies these conditions is now only a question of time. And when this time arrives—“Why, the stars are as near as we wish them.”

THE END



THE EASY WAY

BY OSCAR A. BOCH

Sometimes a thing that's easy to do is hard to achieve. And the way kids are these days, you can't tell what fool thing they'll think up. Even, maybe, an easy way...

Illustrated by van Dongen

I suppose I would have realized something was wrong much sooner if I had been closer to my family. I can see it now, as all of the little things come back to me, but I didn't see the connections then. So it all happened at once.

Probably the first inkling I had was when Phebe came out of the kitchen and interrupted me. She said, "Hal, if you don't talk to that boy pretty soon, there'll be trouble." Her voice had a sharp edge, like when she would ask me for the tenth time to put up the screens.

I looked up, making a big show of turning down the book on Management and Production Control I was reading. Phebe was still a good-looking woman and could easily pass for twenty-five when she fixed herself up. It's funny how seemingly irrelevant thoughts slip through your mind when it's really concentrated on something else. Here I was really trying to tie her remark in with some idea of what she meant, and my mind was also picturing her at twenty-five reading fairy stories to our two kids.

Phebe didn't wait for me to answer; she rephrased her gambit.

"Thanks for looking up, Hal Thomas," she said. Her lips were pressed tightly against her teeth. "But unless you make that boy stop whatever he's doing and come down to earth, I'll . . . I'll go dippy!"

Tread softly, old man, I thought; because I could see a bit of something

that looked like terror in her eyes, and her knuckles were white from the grip she had on the dish towel. I placed my pipe in the ash tray.

"Easy, darling," I said. "Of course I'll talk to him, but—"

A light but very definite thud made a window rattle.

"You see!" Phebe said; and I got up.

The sound came from upstairs; and I remembered that there had been a couple of previous such thuds, the last coming maybe ten minutes before Phebe had marched so determinedly into the living room. I even remembered looking up then to see if Margaret, who was doing her homework at the dining room table, had dropped a book on the floor. But she hadn't, and I hadn't looked farther; with youngsters like Terry and Margaret in the house there seemed always to be thuds of one kind or another.

But now Phebe was positively trembling. I got up and put my arm around her. "Well," I said, "I don't quite—"

Margaret called in, "It's really all right, Mother. Terry's just going about things the hard way. That's all."

I looked quickly at both of them. Margaret sat half turned from something she had been writing, her elbow on the table, her chin propped in her hand, her beautiful golden hair—that is, she's blond, like me—caught up in some manner that clicked in my mind as Grecian, watching me. Phebe stood

rigid, looking toward the head of the stair, her clenched fist pressing the dish towel against her mouth—expecting, I couldn't imagine what.

"Look," I said, "what's going on around here?"

Phebe almost whipped out of the curve of my arm. Arms stiff at her sides she glared at me. "That's the trouble," she said. "You're so wrapped up in your work, you have no time for your children. You don't know anything about them. You're a stranger here."

"Aw, now look," I said. I stepped toward her; but she backed away.

"No. You look," she said. "Hal, most children can go to their fathers with their problems and ideas. Their fathers at least try to show some interest, some understanding; they give help, advice, counsel. But not you. Oh no, not you—you're too busy."

"Well," I flared, "somebody's got to make what it takes to pay the bills around here, and—"

"We're paying our bills," she flared right back. "And I'm more concerned about our children than I am about any promotion you might get in that . . . that greedy company you work for."

"All right, all right," I said, "let's not go into that now. But if you must call me a stranger, then please carry it through and tell me what's going on."

Phebe didn't answer. I looked around at Margaret. She had turned back to

her homework and didn't speak either.

My pipe was out, so I relit it. Then I went upstairs.

Terry had a desk in his room. He was sitting at it when I walked in.

"Doing your homework?" I asked.

He looked up; startled, I guess. He must have heard me coming, but thought I was headed for the bathroom. I suddenly remembered I hadn't stepped in on him like this in—it must have been eight years; he was fifteen now.

Then Terry said, "Hello, Dad . . . yeah." He glanced down at the papers on his desk. "I'm working on something—a problem in physics."

"Oh," I said. I looked around his room, puffing slowly at my pipe. Except for a contraption of some kind, his room was pretty much what I expected. His bed, somewhat rumped; a yellow class-sweater with a big, white Y on it, hanging off a chair; his dresser, properly piled with things that should have been put away or thrown away; on a small workbench he'd made, a lot of small tools, a couple of model airplanes and some miscellaneous junk; a large map of the world tacked on one wall and some pictures clipped from aeronautical magazines clustered here and there on the others; a couple of bookshelves, really loaded with a jumble of magazines, papers and books, next to the head of his bed. The whole thing, I supposed, a bane to his mother's existence, but

a boy's room, when you don't have a cellar.

"Something you wanted, Dad?"

I looked at his lean face, so much like his mother's—in a nice, angular kind of way—at his black, touseled, wavy hair and his deep-blue eyes watching me without blinking. He seemed tense, too tense, more alert than necessary—or was he merely startled, as I had thought?

"I heard some thumps," I said. "Are you all right?"

He nodded. "Yeah, Dad. Sure."

I waited for him to open up; but he had answered my question. I pointed my pipe at the thing alongside of his desk, the contraption thing. It was a cage-like affair, cylindrical, about a foot and a half in diameter and six feet high, with a closed base that looked like a hatbox. The cagework looked to be of quarter-inch material, transparent.

"Quite a gadget you got there," I said. I walked over to it. "Lucite rods?"

Other than shaking his head, he made no move. "Plastic tubes," he said.

"This what thumped?" I asked.

He nodded.

"Care to tell me what it's for?" I inquired.

"It's the antigravity machine I told you about," he answered.

I caught my breath. Then I remembered a couple of one-sided conversations, about a month before,

wherein Terry had been telling me about his theories on gravity; but, I reflected ruefully, my mind had been more on the book I was reading at the time. I looked back to him. He was peering at his nails, picking at them.

I know now that I should have asked him right then to tell me all about his theories and this gravity contraption he had built, but I was embarrassed. I could see he knew I hadn't been listening when he had told me, when he had wanted my opinion and help; but I couldn't just suddenly be all interest. He'd think it was put on. Phebe was right, of course; but I'd have to change slowly, get to know him better by degrees. I felt that my pattern was too well established to do it any differently. So, I pretended to remember.

"Does it work, yet?" I asked.

He shook his head, still looking down at his fingers. "Not enough rotor speed," he said.

I smiled. Every boy goes through these stages, I thought, of believing he can do the impossible. The trying only serves to teach him a little more respect for the achievements of others, achievements for which at the time he has so little appreciation. I guess, right then I should have remembered that this gadget *had thumped*. Instead, I said, "Can I help?"

For an instant, he looked up, searching my face. Then he looked down and shook his head.

Phebe was still sitting where I had left her, when I came down. She looked at me inquiringly.

"He's building an antigravity machine," I said. I sat down and picked up my book. In the middle of the first sentence her voice speared me.

"Harold Thomas, if you don't put that book down and tell me, I'll scream."

"I did tell you, dear," I said. "There's nothing to get excited about."

Phebe glared at me. "You didn't tell me that you told him to stop," she said, "and that's what I'm waiting to hear."

Some day I hope I'll understand how a woman's mind works. What should be obvious is never obvious to Phebe; but the inscrutable deductions she makes from the inane chatter of her friends is beyond me.

"Look, darling," I said very patiently, "I told you the boy is building an antigravity machine. Einstein, General Electric and Westinghouse, even if they had all the wealth in Fort Knox to work with, couldn't build an antigravity machine. In fact, nobody in the whole world knows what gravity is."

Then Phebe became patient. She said, "You've got a generator in your car, haven't you?"

I said, "Of course, but—"

"Then tell me what is magnetism?"

I know my mouth snapped closed then, because I could feel twinges in my fillings.

Margaret called in, "I know what gravity is, Dad."

"You keep out of this," I said sternly. "Look, Phebe, don't you understand? Gravity is different—"

Phebe twisted the dish towel, petulantly, I thought. She said, "Suppose I can't feel heat; you can. Explain it to me. You can't—yet heat does half of the world's work. Gravity holds everything down; man works and studies for thousands of years to overcome it. Brains, brains, brains, tons of the stuff, all explaining, explaining, explaining. And a dumb tree sends its sap from its roots to its leaves—how? Tell me how? You can't. You say I don't understand—" She paused. "All I understand," she continued, "and you would, too, if you'd listen to your own kids talk, is that new ideas don't care who thinks of them—and maybe thinking isn't the only thing that's necessary."

The towel ripped.

Now, I'm just a methods man in a textile mill. I stand five foot nine in my stocking feet; weigh one hundred and seventy pounds, with fifteen of them around my waist—mostly in front. I'm blond and have a small, blond mustache. I'm not aggressive physically, though I do have a lot of push in the direction of bettering myself. I work days, bowl Wednesday evenings and study the rest of the time, except for eight hours sleep. What Phebe is talking about is familiar to me; I did graduate from

high school. But I'm no scientist and don't pretend to know all the answers. What I don't understand, I let alone. I'm sorry I neglected my children, and I'll try to do better. But, so help me, this situation right now is too much for my blood.

"I'm going to bed," I said, and knocked the dottle out of my pipe.

Margaret came in from the dining room. She said, "Daddy, this is all my fault, and I'm sorry."

"Don't be silly," I said. "Your mother thinks your brother is a genius who is going to do what nobody else can ever do. And when a fifteen-year-old boy builds an antigravity machine, no thirteen-year-old girl should have to take the blame, or the credit, for it. Good night, ladies."

"But, Dad," Margaret persisted, "you don't understand. It was I who discovered spatial tension and explained it to Terry."

"Spatial tension?" I said. "What's that?"

Phebe looked disgusted. "Terry told you all about it a month or more ago."

"Sure, Dad," Margaret said patiently. "You must remember. Spatial tension is like surface tension, only it acts in three dimensions simultaneously instead of in two."

"Who told you that?" I asked quite calmly. I remembered some gibberish, that's all.

"Nobody," Margaret said. "I was just thinking about it one day, and

it seemed logical—to me anyway."

I said, "Well, what's that got to do with an antigravity machine?"

"Nothing, really," Margaret said innocently. "Except that they're all wrong about gravity."

I shivered a little and looked to see where the draft was coming from—why else should the small hairs on my arms and shoulders lift? "Who's wrong?" I tried to ask just as innocently.

"Everybody." She said it blandly, as a matter of fact; just like a woman. "You see," she went on, "everybody thinks that gravity is an attraction of some kind."

"And— isn't it?"

"Oh, Daddy," she said to the *Pithecanthropus Erectus* which I, no doubt, was, in her eyes, "of course not!" She squatted on a scatter rug, facing Phebe and me. "I'll explain everything to—"

"Oh, no you don't," I said. "I'm going to bed." I heaved forward.

Phebe said, "Not *this* time, Harold Thomas." Her eyes were like manacles.

I know when I am outnumbered; so I sat back.

Margaret's golden hair was a flame behind her pale face; her dark eyebrows, lashes and deep hazel eyes were like embers. She said, "We were watching an experiment in osmosis, in class; and I thought of space-time forming little vortexes where it flowed through the porous spots in eternity. And I thought of all the matter

collecting at these spots and forming planets—”

“What do *you* know about space-time?” I cut in. I had to.

“Nothing,” she answered. “It just seemed logical and cute.”

“Space-time—*is* cute?” I swallowed quite noticeably; I couldn’t help it.

Phebe said, “No, Hal, the vortexes. If you could see the stuff in my dish-water being simply *pressed* against the strainer, you’d understand. Go on, dear.”

I said, “And I suppose the *surface* of space pressing against us as it goes through this . . . this *hole*—is gravity *pressure*?” I meant to sound sarcastic. A man would have thought so.

“No,” Margaret said, squinting. “That would be a two-dimensional pressure—like of wind or of water. This is a three-dimensional pressure. Space-time is really four-dimensional, you know; and space is a surface.”

I didn’t know. And she didn’t know. So I said, “Well, come on. Get to the point. What about Terry?”

“Well,” Margaret said, “space is all around us and all through us, of course, but it doesn’t flow through us—”

“Why?” I asked, because at the office “Why?” is a deadly question.

Phebe said, “Weren’t you listening, Hal? Because it has surface tension, of course.”

“Not surface tension, Mother,” Margaret said. “Spatial tension: *this* surface has three dimensions.”

“Of course,” Phebe said. “And

Terry is building a machine to break that tension, so that he can fly—”

“No, Mother,” Margaret said. “Not break the tension. That would get him all wet, and—”

“*Well!*” I squeaked. I know I did, but I couldn’t help it.

“Look, Dad,” Margaret said. She was being patient again. “If you place a dry needle on the surface of water, it will float, supported by surface tension. Wet the needle, and it will sink; it will move through the third dimension. So, if Terry gets wet with space, he’ll—”

“Move *up*?” I breathed.

“No,” she said. “That would be one of the dimensions of the surface. He’d move in the fourth—Time.”

For a moment we all just sat. Phebe wrung the towel and cast apprehensive glances toward the head of the stairs; but I needed this moment to clear away the web of enchantment my little witch offspring had cast over me. I preferred, however, to think that I had fallen asleep while I was reading, and that this was all a dream. Surely, *this* kind of situation, or discussion, could never develop in *my* house—not seriously, anyway. I remembered how my friends and I had discussed science-fiction stories when I was a kid, but we never frightened our parents with predictions of flying off into space and fighting monsters on other planets—though, maybe they did have some worrisome dreams; I



wouldn't know. But, if that's what this was—and it was, of course—then I had best be off to bed instead of sleeping in my chair. I was about to yawn myself awake, when I remembered a remark Margaret had made.

I said, "Margaret, a while back you said that Terry was going about it the hard way, remember?"

"Yes, Dad. I meant that he is building a machine, when it isn't necessary. You see—"

Phebe said, "Just like all you men. Build machines, build machines; that's all you think of. Brains, brains, brains; as if there weren't other things in life."

"Phebe, please," I said.

"But Mother's right, Dad," Margaret said. "You see, men make cer-

tain assumptions and then use up all of the wonderful powers of their minds proving their assumptions to be correct, even when they're not; and even build machines to prove they're right.

"Assumptions?" I said. "What assumptions?"

"Oh, lots of them," she said. "Like this gravity, for instance. I'm sure it is a pressure that is local to planets."

"You're sure, eh?" I said. "Then what holds the planets in their orbits?"

"Nothing," she said, unperturbed. "That's another of your assumptions: That a body will move in a straight line unless deflected by some outside force."

"And that it will," I said. I smiled. "I have you there. Everyone knows that, if you whirl a weight around on

the end of a string, it will fly off in a straight line when you let go—deflected only by wind and gravity.”

“That’s right, Dad,” Margaret said. “But my teacher says that such a body is actually traveling tangentially to a radius at each instant of its revolution. Wouldn’t you say it is still doing the same thing when it is released? A tangent isn’t a curve, you know.”

“Yes, but—”

“I think, Dad, that the apparent circular orbit of the weight on the string is actually a straight line, and that the apparent free path of the released weight is a circle. They only look the reverse because we are in a vortex. Straighten out the vortex, as interplanetary space is, and that orbit becomes straight. Similarly, that free path becomes a closed curve.”

“Margaret,” I said, I think, hol-
lowly, “you don’t talk like this to
others—I hope?”

“Only my teacher,” she said. “I told her that I thought it just as sensible to say that a body will tend to move in a circle unless deflected by some outside force, as to say the opposite—and what do you think?”

I shrank in my chair. “I can guess,” I said.

“She said I am an iconoclast.”

Phebe said, “I think that teacher is horrid.”

“Look, Phebe—”

“Stop Look-Phebe-ing me, Hal! I think Margaret is very smart for

her age, and what she says makes sense to me.”

I threw up my hands. “O.K.,” I said. “I’ve had enough; so I think I’ll just wake up, now, and go to bed.”

Phebe looked puzzled. Then she smiled. “All right, Hal. Have your little joke. But please look in on Terry and tell him to stop building that . . . that *thing*, will you, dear? I’ll sleep better.”

“O.K.,” I sighed, and to Margaret I said: “As for you, young lady, you’d better get your thinking straightened out, if you intend to associate with normal people, or—”

She smiled, as innocently as Mona Lisa, and said: “Oh, but I have, Daddy. And I’ve figured it all out: That for thousands of years people didn’t have machines but they did manage to fly through the air—”

“Rubbish,” I snorted.

“But legends are loaded with stories of—”

“Fairytale.”

“Oh, Daddy,” she said, “you’re impossible. Don’t you see that it is just that kind of thinking that stopped mankind from progressing thousands of years ago? Lately they’ve been building machines to try and catch up. But, like I told Terry, that’s the hard way.”

“Margaret, I—”

“Wait, Dad—” She paused as if to make up her mind. Then she said, “I got to thinking like this only a few

weeks ago, when it occurred to me that all of the great figures in mythology had something we don't learn much about today. Oh, I know they are supposed to have been legendary. But, Dad, they are only legendary today; once they were historical; and they earned undying memory because they believed in the God-powers all men have. They knew that within them lay the means to control all forces, and they pitied those who tried to substitute mechanical means for the generation and control of these forces—like Terry, upstairs."

Margaret settled herself a little more comfortably on the small scatter rug. Then she continued: "I've talked about these things here at home for about a month. Mother believes me, but she is frightened. Terry believes me, but he says he can do everything better mechanically. You have nodded your head to both Terry and me, but you have never really listened. Now I'm going to tell you something I haven't told any of you before: Space is the most easily worked substance in all creation. And the mind is the tool that works it. Not the will, which is the barrier of the mind; nor the wish, which is a lazy application; but dynamic belief, which is a force of sure and positive acceptance.

"Dad, I've learned only a little of what belief can do; but I have learned that belief can expand space so that it will float—like hot water will float on cold water. Watch—"

Margaret moved her arms out stiffly, until her fingers pointed to the edges of the rug. For a moment she stared straight ahead, then a faint smile curved her lips.

I looked at Phebe. She stared. Suddenly she pressed back in her chair, her eyes wide, and jammed the back of one hand against her mouth.

I whirled in my chair. I supposed it was a trick of my eyes, though I remember telling myself again that this was a dream and not to let it get me; but beyond the tips of Margaret's fingers there had appeared a faint foginess.

And even as I watched, the foginess crept under the rug and lifted the edges.

I know I must have gasped, because I remember hearing myself breathe; and involuntarily I threw one hand forward as if to say by gesture the negation in my mind.

Quickly now the rug seemed to ripple all over, as if the fog were spreading out under all of it.

Then, undulating gently, it raised off the floor about three feet—and Margaret, by simply pointing her finger, made a graceful turn around the room.

I could feel my eyes bulge, and my throat was so tight I couldn't utter a sound. You could cut the silence with a knife—until Phebe screamed.

Never in my life have I ever heard a scream like that. My ears felt as though chaos had crashed into them.

Almost at once, the rug tilted and went limp, dumping Margaret to the floor. Like a rag doll, she lay awkward and still. I surged up out of my chair and started toward her. Then the scream turned to a sigh, and I turned.

I managed to catch Phebe as she was sliding to the floor and to ease her down. Then I jumped to Margaret. The poor kid had bumped her head hard as she landed, and was now groaning. In a moment she was sitting up and smiling weakly.

"Mother startled me," she said.

I guess I was scared mad at that point, and I must have looked terrible. I told Margaret that if she ever tried an exhibition like that again I would spank her till she could float on her own blisters, and she promised she never would. From the look in her eyes I believed her.

Then it occurred to me that Terry must have heard his mother scream and Margaret fall, but he had not appeared in response. Directing Margaret to see after her mother, I ran up to Terry's room.

One step inside his room, I stopped. No Terry. No contraption. The disorder I had seen before appeared not to have been further disturbed. I ran to his windows. Both locked. His closet—not in there.

He couldn't have come down stairs, or I would have seen him. Swiftly I searched our bedroom, Margaret's, all the closets, the bathroom and finally

the attic. Terry and his contraption were gone.

I stood, then, in the upper hall, more stunned than I have ever been in my whole life. I recalled what Margaret had said, and my stomach went into a knot. What if Terry had actually got himself wet with space—*wet!* It sounded silly, even to think it. I wanted to giggle hysterically. It was ridiculous.

I don't know how long I stood there, but I must have been rigid, because finally I could feel myself gradually relax. Then my thoughts stopped racing through impossible conjectures that were hot with fear, and became numb. Only the heartburn remained.

Phebe was still out when I went down, and Margaret was kneeling by her side whimpering.

I said, "Aw, shut up!" and went into the kitchen for a wet towel.

As I entered the living room, I heard a thud—upstairs.

I tossed Margaret the towel, and three breaths later I opened the door into Terry's room. Terry sat at his desk. The contraption stood about where I had seen it last. Terry watched me as I closed the door.

"Now, young man," I said, "talk! Where have you been?"

Terry stood up and faced me. "Gee, Dad," he said, "what's the matter?"

"I repeat," I said, "where have you been?"

Terry looked around, seemingly bewildered. He said, "Me? Why, Dad,

I haven't been anywhere."

"Don't lie to me, young man," I said, "or I'll raise welts on your bare bottom. I was in this room not three minutes ago and you were not here, and that . . . that contraption wasn't here, either. Now—"

Terry's face went berserk. "Then it works!" he howled. "Dad! It works! Boy!" He snacked his fist into his palm and turned to his machine. Then he turned back. "It's really a Time machine, Dad! It remained stationary in space but moved forward in Time—only a few minutes, but it moved! Boy! And I've been thinking it made me dizzy—that was the Time jump. Wow!" He grabbed my arm. "Dad! You know what that bump was? The earth's surface is curved, so it moved down from the tangent I was in. When I materialized I dropped to the floor. Now all I gotta do is—"

"You're lucky," I said sternly. "If you'd traveled in Time much longer without following the curved path of this room in space, you might have materialized while you were halfway through the roof."

His enthusiasm vanished; he caught on fast.

"Now," I said, "will you take that *thing* apart, or shall I?"

"But, Dad!" he cried. "Think—"

"My son," I said, "I was thinking long before you were born. If we are ever going to be a nice, quiet, sane family again, that *thing* has got to go."

"No, Dad! Please!" He clung to my arm.

He was still clinging after I had stamped the contraption to pieces.

"It's simple to build," he sobbed, after I had finished. "All you have to do is generate a magnetic current in an electric field and send it through those tubes, and then—"

"And then," I finished, "if you ever build one again as long as I'm alive, I'll break it." I guess I was somewhat distraught.

I went downstairs. Phebe and Margaret were not there. I ran into the dining room, then the kitchen. Not there, either. I called. Margaret answered from upstairs.

I ran back up, really puffing by this time. They were in our room. Phebe lay on the bed.

"How's Mother?" I asked.

"All right, Daddy," Margaret said. "She's coming to, I think. Open the window, will you, Dad? Fresh air, you know. And close the door, please. We don't want Terry snooping, do we?"

I started for the window. Then it hit me. "Say!" I said. "How did your mother get up here? *You* didn't carry her?"

"Silly," she smiled. "Of course not. I brought her. Oh, Daddy, you're so slow—"

Margaret pointed to the door, and it closed. Then she pointed to the window, and it opened.

THE END

THEY'D RATHER BE RIGHT

BY

MARK CLIFTON
AND
FRANK RILEY

Illustrated by Freas

Second of Four Parts. It was said long ago that the price of immortality is rebirth—and that is a price that few have ever been willing to pay. Given the chance . . .

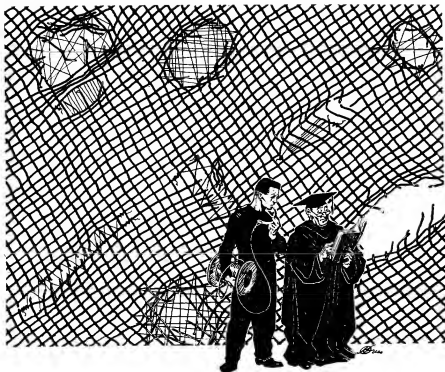
SYNOPSIS

Joe Carter, a telepath, had fled from Hoxworth University with "Bossy," a mechanical brain which represented man's closest approach to duplicating the human brain.

The machine had originated through an order from the federal government to take the principles of the guided missile and develop them to the point where a vehicle could think for itself under all circumstances. As frequently happens in science, the end result was far removed from what they had started

out to accomplish. The mechanical brain which resulted aroused the superstitious fears of mobs who were incited by rabble rousers to destroy the machine and the men who were principally responsible for it.

Aside from Joe, whose part had been to open up the barriers and antagonisms between men's minds, so that they could work more coöperatively in understanding of one another's concepts, had been Jonathan Billings, world famous dean of psychosomatics at the university, and Duane Hoskins, professor of cybernetics.



These two men fled from the mob, and by prearrangement met at the San Francisco depot where they awaited Joe. Since Bossy had been subsidized by the government, she was considered government property. Federal agents had followed Billings to the meeting place in hopes that Billings would lead them to where Bossy had been hidden.

On his way to join the two professors, Joe realized they were under surveillance and through his psionic abilities he distracted the agents long enough to rescue the two professors and to obtain the crate of Bossy's parts which had been

shipped to this point under the guise of television equipment.

Joe hid the professors in a skid-row flophouse while he made arrangements for a safer hiding place through Carney, a skid-row habitué whom Joe had met previously in a mind-reading act with a traveling carnival. Carney arranged to rent basement quarters, previously used by counterfeiters, from old Mabel who had made her doubtful profession pay off well enough that she now owned much of the skid-row property.

Neither Mabel nor Carney knew that this was the celebrated Bossy, whose

disappearance was being discussed in all the newspapers. Everyone was demanding that Bossy be found and destroyed. Only one public voice called for reasonable consideration of Bossy's potential value. Howard Kennedy, non-conformist industrialist, published an open letter through one of the newspapers he controlled which was recognized by Joe and the professors to be a bid for their coöperation with him.

In setting up the memory storage banks of Bossy, scientists had exercised great care to feed in only known fact. They screened out theoretical conclusions drawn from these facts. It was Joe's theory that the tensions created by warped suppositions and prejudices was one source of man's ills. He prevailed upon Billings to feed all the knowledge he had of psychotherapy into Bossy's storage units, in the hope that if Bossy were shown to be of curative benefit to man she would be more welcome by the public.

Old Mabel, now in her late sixties, was crippled with arthritis. Further, her attitude was one of great-hearted tolerance, and a singular lack of knowing right from wrong. Since psychosomatic therapy hinges upon the patient's willingness to consider the validity of points of view other than his own, and since Mabel willingly admitted that her years and experiences had left her without any positive opinions of the only right way of things, she became a natural subject for testing Bossy's psychosomatic abilities.

After eight days of lying in deep hypnosis in the network of electrodes connected to Bossy, the scientists and Joe were astonished to see the aged old woman begin to revert to a youthful girl.

Far more than a mere cure, they had discovered how to work at a cellular level, to restore the vigor of youth, to give possible immortality.

Part 2

VIII.

It was not a miracle.

The regeneration and rejuvenation of Mabel was no more than the end result of completely applied psychosomatic therapy. Yet it was a result which a human therapist, unassisted by Bossy, could never attain. However he may strive for detachment from bias, no man can grow to maturity without at least something of a framework of prejudice; and the therapist, in removing the warping deformations of one matrix, unconsciously supplies another.

Further, thousands of hours of verbal therapy were reduced to seconds by Bossy. Never before had anyone known what a complete therapy could produce. And they did not know now. Dr. Billings, Professor Hoskins, Joe Carter, the three men stood looking down at Mabel who lay on the couch, the center of a network of conduits connecting her to Bossy, and marveled.

They did not understand the obvious reformation of Mabel's body. But they were witnessing it.

It was characteristic of Billings that even in the moments of astonishment he remembered to check the gross aids of therapy. To his surprise, the last drops of the synthetic plasma, fed from the suspended tank to Mabel's veins, were running out of the container. He had put on a fresh bottle the night before, and at her low threshold of activity, it should have lasted for two more days.

Almost instantly, as the last drops ran down the transparent tube, Mabel's lips began to move.

"Hungry," she muttered. "Hungry, hungry, hungry, HUNGRY!"

Bossy's was flashing on and off in emergency signals.

"Cells cannot regenerate without food," the machine said, over and over. The statement of fact seemed, to the men, to carry a connotation of contemptuous impatience, as if these human beings should be expected to know at least that much.

Quickly Billings ran across the room, grabbed up one of the few remaining bottles of plasma, broke the seal on his way back, and replaced the empty bottle with the full one. As the liquid began to flow down the tube, Mabel's mutterings ceased, and she lay still and quiet again. Almost visibly, Joe, Dr. Billings and Professor Hoskins could see the changes in her appearance taking place, and wondered what

mental changes could account for them.

Joe tried to follow, but the thought-patterns were so rapid and so varied it was like trying to pick up and follow one spoke in the blur of a speeding wheel.

"Hunger creates tensions to act as cell repressants, hindering therapy," Bossy volunteered a flash on her screen, as if to reproach them and warn them not to let it happen again. In the pattern of human beings generally, they had given her a job to do, and then followed a procedure to hamstring her and prevent her from doing it. As with human beings generally, they did not intend to thwart her, they merely let their lack of comprehension do it for them.

Perceptibly the level in the bottle was lowering. At this rate the supply, expected to last for another two days, would be gone in two hours. And they had only one more bottle in reserve.

Synthetic fortified plasma cannot be cooked up in the ordinary apartment kitchen, and none of them were sufficient biochemists to attempt it. The only alternative to halting the therapy, and none of them would consider that, was to obtain more plasma quickly, within the four hours their total supply would last. And even that time was a rough estimate, the consumption of the supply might be progressively accelerated.

They called Carney into their living room.

He had been hanging around the outskirts of the experiment for a week, since it had started; not admitted to the workroom, nor asking to be admitted since Mabel, herself, had told him to stay out. His sulks and beligerence had disappeared, replaced by anxiety. His anxiety was mitigated by confidence. He realized that inasmuch as Mabel had made the decision and had stuck to it, she could not be in better hands.

But their reports to him did create some doubts. They were all identical, and to him they were vague and unsatisfactory.

"Mabel is resting naturally and progressing normally."

He had not had much real experience with hospitals. His concepts of what probably went on was drawn from motion picture script writers' efforts to knock themselves out with drama piled upon drama, one near-fatal crisis after another, ever trying with the same old tricks to excite a public long since immune to further emotional response. Yet, without it, something seemed lacking to Carney.

His reaction, when Joe told him that more plasma must be obtained at once, was one more nearly relief than alarm. This was more like. As with the script writers, it did not occur to him that crisis piled upon crisis is usually a sign of inefficiency and bungling. It did not occur to him to ask the very normal question of why this need for further plasma

had not been foreseen, or what change had occurred in Mabel to make their estimates fall short.

Actually, he was flooded with a sense of satisfaction. He would be of some use after all, Mabel's life depended upon him. He, Carney, was as important to her as these Brains.

He was coöperative. That is, he wanted to be.

"But I don't know where I could buy that stuff on short notice," he blurted. "I had plenty of warning on the last and put out the word I could use it. In a few days the word came back that it was ready. You got to be careful on things like that. It's different from tools and electrical stuff."

Billings, standing beside Joe, was visibly shaken.

"We simply have to get more," he insisted. "Our present supply will last less than four hours. Mabel can't be cured without it. It's dangerous to try."

Carney blanched. His fingers shook as he tried to light a cigarette.

"If I had more time," he muttered, "but four hours, and in broad daylight."

Joe glanced at his wristwatch.

"It's nine o'clock now. That means we must be back by noon, to give us margin. Where's the nearest big hospital?"

"There's an emergency just a couple of blocks over," Carney said.

"An emergency hospital wouldn't have enough," Joe said. "I want a

place that would have a big supply."

"I don't know," Carney said hesitantly. "There's Memorial, I guess. Down off Protrero."

"I want a doctor's whites," Joe said crisply. "Where can I get them?"

"I can do that," Carney said with relief. "It'll take me five minutes." He turned and almost ran out of the room.

He was back in less than five minutes. The uniform was complete, even to a little black bag.

"The boys' fingers do stick to everything, don't they?" Joe smiled.

Carney grinned.

They were almost over to the interurban depot, where taxis were plentiful, before Carney asked any questions.

"What're you gonna do, Joe?" he asked between puffs of breath as they walked rapidly down the street.

"Steel it," Joe said tersely. "There are times when the ethics of esperance must be secondary."

Carney nodded, sagely, without any comprehension of the phrase.

"In broad daylight!" he gulped. He sighed and squared his thin shoulders. "But I'll try anything for Mabel," he added, slipping easily into the improbable valence of a movie plot.

When the cab pulled up in the broad circular driveway in front of the hospital, Joe paid the fare and gave the driver a tip.

"If you'll wait," Joe said, "we'll be going back in about ten minutes." His words were casual, but he beamed a sense of high drama into the driver's mind.

"I'll wait," the cabbie promised, as if he were taking an oath.

Joe took the steps, two at a time, with Carney panting behind him.

In the lobby, Joe smiled at the young nurse behind the information window, and beamed a strong field of reassurance at her.

"Where can I find the head nurse, please?" His eyes told her that, after having seen her, he was in no way interested in the old battle-axe of a head nurse.

The girl returned his smile, while she automatically evaluated him for age, possible marital status, financial prospects. She was already confident of his susceptibility. It was the normal and expected thought process. Joe tied himself into it, and pushed it farther by gently projecting the image of a young interne backed by wealthy parents.

The nurse's eyes sparkled, and she inhaled to give Joe a better appraisal of the merchandise.

"Do you mean our Day Supervisor?" she twinkled. "Shall I get her on the phone?" Her tones, and her thought-patterns, pleaded with him not to be in such a hurry to part company.

To the image of the wealthy young interne, unmarried, Joe fed the pic-

ture of a shining blue convertible, upholstered in red leather, and followed that with a picture of bowing head waiters in a dining room with soft lights.

"She's so busy this time of day," the nurse said doubtfully. "If I could help you —?"

"Well, I'm really heading for the Blood Bank," Joe said easily. "I'm borrowing a supply for St. Luke's —" The picture crystallized into a long evening of dancing at the Venetian Room at the Fairmont, so much less touristy than the Top of the Mark.

"Oh, that," the now utterly vivacious young woman trilled. "I'll be happy to show you the way, Dr. —?"

"Dr. Carter . . . soon, anyway . . . I hope," said Joe, with a wink.

The nurse turned to the non-uniformed girl at the typewriter behind her.

"I'll be right back, darling," she cooed. "If anyone asks where I am —"

"I know," the girl said with a bored tone. "You're powdering your nose." These nurses with their airs!

None of them paid any attention at all to Carney. Obviously, in the hierarchy of the hospital caste, a system which puts India's to shame, he was an Untouchable, lower, probably, than even an Orderly. As Joe and the nurse walked down the corridor, her heels clicking smartly, Joe knew that Carney, following behind, was staring at his back with an awe bordering on reverence.

During the course of the short trip to the second floor, rear, Joe dutifully went through the protocol of finding out the young nurse's name, hours on and off duty, the telephone number at the adjoining nurse's residence.

When they reached the Blood Storage Room, the nurse spoke crisply, and fraternally, to the interne in charge.

"This is Dr. Carter, from St. Luke's —"

The interne, obviously not backed by wealthy parents or a blue convertible, regarded Joe enviously.

"I wish I could make St. Luke's," he said. "How long have you got?"

"Two more months," replied Joe, with a sidelong glance at the nurse. "Sometime come over and get acquainted. Glad to introduce you around."

"Well, thanks! I'd sure like to!" The interne offered his hand. "Harry Vedder," he said. "Cal —"

"Harvard Medical," murmured Joe. The interne blinked with respect, and thawed even more. His guess had been right. This was one of those wealthy boys; probably been money in the family so long that he didn't even think about it; all this equality was the real thing, not an affectation. A real guy! The nurse was all but ready to take off and fly.

"A couple dozen bottles will be enough," Joe said, bringing their thoughts back down to his errand. "Surgery ran short. Called your ad-

ministrator. Guess you got the release. We're returning it in the morning."

His words were innocuous enough, but his face showed them what he thought of a hospital administration who could let surgery run short of a vital supply. The nurse and interne picked up the expression, and suppressed smiles. As with any subordinate under a hard taskmaster, they were delighted to see their bosses slip.

"No, the order didn't come through," the interne said.

Joe grinned knowingly. Everybody, all along the line, was slipping.

"Maybe you'd better call the front office and get confirmation," he said easily. He heard a subdued gasp behind him from Carney.

"Not me," the interne said instantly. "Maybe over at St. Luke's—but here at Memorial we don't remind our heads that they've slipped. Just take along what you need, and I'll check it out when the order does come through."

They all grinned then, the nurse turning hers into a charming, provocative smile.

In another two minutes, Carney was staggering down the corridor under the load of heavy cartons. To the astonishment of the interne and the nurse, Joe, himself, hoisted the last remaining box on his own shoulder. The astonishment gave way to satisfaction. This was a real guy, indeed, thoughtful enough not to make the old man take two trips, secure enough

in his position that he didn't have to make a show of it.

With his free hand, Joe again shook hands with the interne. The nurse twinkled along beside him down the corridor, as if he were her special property. She escorted him to the front door, to save him the trouble of being stopped and questioned should any official notice the two men carrying out cartons of plasma.

"Don't forget," she whispered as she held open the heavy door for him.

Joe laughed, a laugh which promised a great deal.

The taxi driver came halfway up the steps and relieved Carney of part of the load. By the time he had driven ten blocks he had convinced himself this was a very important mission; and by the time he helped them unload their boxes in front of the emergency hospital, he was certain he had been an important part of high drama. When they refused his help in carrying the cartons into the emergency hospital, he knew beyond all doubt that secrecy on his part was of highest importance. He drove away, his long dormant scout's honor keeping him from even looking back through his rear-view mirror.

"Kid," Carney puffed, as they let themselves in through the door to their own basement quarters, "if you can stay out of jail, you'll con a million." He was filled with admiration, almost ready to forgive Joe for being a Brain.

Joe stopped the old man in their living room, unwilling to let him go on into the workroom, to see what was happening to Mabel.

"This will be enough to last us a couple of days, anyway," Joe said. "But you'd better send out the word for more plasma through your usual channels."

"Sure takes a lot," Carney answered curiously.

"Always does," Joe shrugged, as if it had all been perfectly normal. "Think you can get more?"

"Sure," Carney answered easily, "now that I've got time."

Carney went away satisfied, comfortable in his mind for the first time in more than a week. He had something to do, he was important again.

Inside the workroom, Billings and Hoskins were still standing near Mabel, watching her. Somehow, probably in an absent-minded daze, Hoskins had brewed their morning coffee, and, equally absently, they were drinking it.

A quick probe of Billings' stream of rationalizing satisfied Joe that the first astonishment had lessened and was being replaced by a new evaluation of the tenets of psychosomatic therapy. Billings was trying to talk this out to Hoskins, to verbalize his thoughts into coherency.

"This is all quite understandable," he was saying slowly, carefully, "if we draw an analogy between the cell

and a bullet shot from a gun. At first there is a given momentum of life force, strong enough to rise in an ordered projectory. The cells renew themselves with healthy vigor. Like the amoeba, barring accident, they are immortal — that is, they have the potential of immortality through continued self renewal."

"But air resistance, or the resistance of heavier materials, and the pull of gravity gradually overcomes the bullet, drags on its momentum, so that the bullet reaches a balance, then gradually sinks to earth, inert," Hoskins said.

"Exactly," Billings agreed, "as do the cells. They renew and multiply through the growth of the child to its maturity. But gradually the accumulation of mistakes, repressions, frustrations, disappointments, tensions of all kinds, overcome the momentum of the initial life force. The cells cannot keep up their renewal production as against all these depressants. They slow down, more and more, until finally some organ — or complex of organs — is too weakened to function. We call it disease, old age, death."

"Would gravity, itself, have any effect, doctor?" Joe asked, as he stepped up to them and poured himself some coffee. "It seems to me that the constant pull of gravity against the cells would tend to slow them down, just as it does the bullet. If cells have a form of memory, as you

contend, then the memory of weariness would be passed from the old cell to the new one, and be added to in the experience of the new cell. The accrued memories of weariness, alone, might be sufficient to account for old age."

Billings looked up at him.

"It could be," he agreed.

"Let's ask Bossy," Hoskins said, instantly.

He flipped open the communications key, and Billings put the question.

"Is gravity a factor in cell renewal?" he asked.

"Yes," the machine answered instantly. "The most basic. All living cells, whatever the organism, accumulate such memory of weight as to destroy their potential for renewal."

"Did you eliminate such cellular memory in the patient?" Joe asked.

"Naturally," Bossy answered. "My instructions, regarding therapy, were to find all tensions of any nature and remove them."

Billings and Hoskins settled back in their chairs.

"And the result is that the organism is allowed to continue on at the rate of its peak," Billings said.

"Let's face it, doctor," Hoskins said harshly. "The result, in effect at least, is — immortality!"

"Well now," Billings said hesitantly. "New repressions, new weariness memories, new suppressants can accumulate —"

"And again be wiped out by treatment," Hoskins said, pounding his fist into the palm of the other hand. "Immortality — it brings up some powerful ethical questions, doctor."

"More than you know," Joe answered with a smile. "You've both overlooked one thing. Mabel was willing. Who else would be?"

"Anybody! Everybody!" Hoskins said at once. "Everybody wants to be immortal."

"Duh . . . I wanna be immortal!" Joe parodied a famous comic, who parodies a vast portion of mankind. "You haven't yet considered the price, Professor Hoskins."

"I'm not sure I know what you mean, Joe," Billings asked curiously.

"The patient must be willing to be relieved of all tensions," Joe said.

"Yes," Billings agreed.

"A firm belief in anything acts as a tension, in that it disallows the opposite of that belief. The admission ticket to immortality is the willingness to divorce oneself from all frameworks of preconception and prejudice."

"Would that be so difficult?" Hoskins asked, with a challenge in his voice.

"I think so," Joe said quietly. "I think, gentlemen, you will find that they'd rather be right — and die."

IX.

For two more days the three men watched the progress of Mabel. They

hardly slept at all, and ate only in snatched mouthfuls. The fascination was beyond anything they had ever experienced.

It was like watching the minute hand of a small watch. No, it was more like the unfolding of some fabulous blossom. Staring intently, the eye could not quite catch any change from microsecond to microsecond. Yet if one looked away and looked back again, the development was apparent. And over the two-day period, the change was incredible.

There had been some alarm about her hair. It had come out in matted gray masses on the pad which supported her head; and for a while they feared she would be completely bald. Then a fine mist of hair began to show, and now her head was covered in a helmet of gold mahogany ringlets. Her face, smoothed to clean and classic form, took on the simplicity of a child, the serenity of a sage.

During the early stages of therapy, Hoskins had attempted to keep her body covered with a sheet. Typical of man, he reasoned that this was a concession to Joe's youth and inexperience. Actually, he was obeying the compulsions of his own tensions. Billings had finally, and rather irritably, reminded him that theirs should be a clinical attitude. Joe, concealing his amusement, reminded him that when one, from earliest childhood, could see directly into the thought streams of others, clothes lost their utility as

a modesty mechanism for individuals.

Hoskins, a little angry at himself for feeling foolish, dispensed with the sheet; and had resolutely maintained a clinical attitude.

Mabel lay in a position faintly suggestive of the foetal curl; or like a dancer of perfect body relaxed and fallen asleep on a casual couch. She breathed slowly and deeply, and only now and then showed a flicker of expression on her face as Bossy touched some deeply buried memory of pain, some formula of prejudice which had no basis in fact, and erased them.

It was still impossible for Joe to get through to her mind. For the first time in his life, he found himself blanked out of another's thoughts, emotions, motives. For the first time, he got a taste of what it must be like to have a normal mind.

He had always pitied others because they were psionically blind; now he marveled at them. How had man managed to live with man at all, unable to see one another truly? No wonder they fumbled awkwardly in their dealings, and made incredible mistakes of misunderstanding!

The human race was like a universe of material bodies, each with its own eccentric orbit, blindly crashing into one another, caroming off, senselessly changing direction as a consequence of random contact. The miracle was that even rudiments of order, on a few occasions of history, had somehow

been achieved.

For the first time, he gained a little respect for cane tapping.

He had likened them to blind people, feeling their way along, tapping their canes ahead of them in total darkness. Their science was a tabulation of how many cane taps it took to get from here to there. Their lore was the measurement of exteriors. He had understood, abstractly, why it was they so often substituted measurement for meaning. But it had taken this inability to get through to Mabel to give him a real appreciation of their problem.

Suddenly Joe felt the need to get out and walk. The two days had left him feeling cramped and stifled. He was restless with his inability to get through to Mabel, his inability to find out if Bossy, in clearing away all the debris of prejudice screens, had opened a window through which she might see — psionically.

His question to Billings on whether there was anything he could do received a negative answer. His question to Bossy on whether any complications were anticipated drew an equal negative. Hoskins murmured that he, himself, was going to catch some sleep and would relieve Billings who watched at Mabel's side. Joe gladly escaped the confines of the room.

Outside, on the street, the dark and fog enveloped him as he headed away from Third and Howard toward Mar-



ket Street. It was a night for walking. And it was a city which calls to stranger and old resident alike for exploration. Years may pass but one never becomes quite accustomed to the magic mystery of San Francisco at night.

And Joe was at that period of growth when a young man walks down the streets of a strange city in the darkness, looking at the absorbing activities of all the little people about him from a mile-high vantage, Escaped, at last, from encircling arms, from the protections of childhood, a youth grows tall, taller than the buildings, broader than the city, swifter than the wind in his face.

He is filled with an all encompassing love for mankind, with pity and compassion. Out of his sudden enormous strength he would do great things of purpose and import. He knows his debt for all the things civilization has given him, and he feels an overwhelming obligation to repay that debt. He must strive to lift man from his despair and purposelessness into realms of great achievement, enlightenment. Nothing less would be good enough for mankind.

And for Joe the purpose of Bossy was to give, at last, psionic sight to man. How else could man take the evolutionary step necessary to lift him from the blind circling rut which, time after time through ensuing civilizations, returned man to his starting point?

He had been sure that his own psionic ability could be put to such use. Along with a few others, he felt his obligation to use his total capacity for helping mankind.

He crossed Market Street, conscious of being confined by the traffic cop's angry whistle to their painted white lines, seeing in that the symbolism of cane tapping, and began to climb the hills of Powell Street.

He had held the theory that since psionic rudiments were more apparent in lower animals and in children than in human adults, if all the debris of false training could be cleared away the esperance might develop. He did not know. He had never been able to discuss it with anyone — feel it with anyone, share comprehensive speculation.

For communication implies shared comprehension. It was not only that they lacked vocabulary — they did not even know they lacked it. To a race of totally deaf would the musical instrument and the complex art of music develop? Even if they gained an abstract comprehension that there could be communication through tone modulation, what ridiculous developments would derive from their attempts to realize it! Logical and rational to them, perhaps, but ridiculous to one who could hear music.

Strangely enough, they had the beginning tools. Einstein had given them the coördinate system, where truth was relative to its own frame-

work but need not apply outside. But instead of being able to use that tool intimately and familiarly in daily life, they relegated it to some theoretical abstraction of light speed and universe size. Instead of seeing meaning, they saw only measurement.

Their mathematics contained many valued calculi of symbolic logic, and, incredibly, they did not see how it could possibly apply to an understanding of one another, but rationalized it out of existence, useful only to some totally alien form of thought.

They were like two-dimensional creatures who had achieved the mathematical symbolism of height, but who, by the very nature of their limitations, could see no way it might apply to their own world reality, and, therefore, denied it except as a plaything of abstraction.

To one whose horizon was bounded by what he could touch with his outstretched cane, where was the vocabulary to give the picture of tumbling mountains piled back and back of one another, farther and farther away, blue and bluer to deep purple in the distance? If there were no organ to respond to light of any nature, how could one build up the concepts of modulation in color? Was it possible to communicate a symphony to a science which could only measure vibrations per second?

Yet, in Bossy, the cane tapping proved valuable. He could not have built Bossy himself. He did not have

the training. He might have accomplished other things through his psi-
onic sight, but he could not have communicated them, and they would, therefore, have been valueless.

To deal with the blind, Bossy had to be of the essence of the blind. To move a two-dimensional creature into a third dimension, there must be at least a two-dimensional entry. It is insufficient to scorn or rant at a two-dimensional creature because he cannot understand the concept of "pinnacle." If his entire world — and all he values — is two-dimensional, what would be the value of a pinnacle to him, even if he could conceive it?

In a nonpsi world he may speculate on the abstraction of the psi, but would he be willing to throw aside his cane tapping to gain it? Wouldn't he regard all talk about it from the two-dimensional point of view, his scorn for the nonsense of height being his greatest handicap in reaching it?

Bossy contained the two-dimensional entry. Bossy contained the most enticing of all baits — immortality!

Was the exit three-dimensional? He did not know.

What would a mind be like, governed solely by rational relationships of facts, free from all the debris of precedent, undeformed by pain, punishment, grief, repression —

Suddenly Joe stopped in his tracks, appalled!

What a terrible oversight!

Man does not live by logic. He does not live according to the patterns of fact applied to fact. He does not live according to rationality, not even according to reason.

He turned and started running swiftly down the hill. Frantically, he sent his probe ahead of him into the basement room, but he could sense nothing of its contents. Billings had fallen asleep in his chair, and in his mind there was only the residue of random impression that everything was all right. Naturally, or he wouldn't have fallen asleep!

What a terrible oversight! Bossy had been filled only with proved fact. Any conclusions drawn were carefully labeled as suspect, to be considered only as possibilities. All prejudice, assumption, fallacy had been carefully screened out by checking and double checking of the finest minds in the country over the past two years of her building back at Hoxworth.

And everything had been fitted into the framework of material for a machine's thinking. In submitting Mabel to the machine, they had overlooked the fact that a machine's approach might not necessarily be the wisest for a human. A previous sentence flashed on Bossy's screen returned to Joe's memory.

"My instructions, regarding therapy, were to find all tensions of any nature, and remove them."

That was what Bossy had done.

Joe groaned aloud at their stupidity

in giving such an order. He was passing St. Francis Hotel now, and had to slow his speed to keep from attracting attention. There were taxis, of course, but a taxi pulling into skid row at this time of night would surely attract too much attention. One does not take taxis to get to a two-bit flophouse.

And it was only a few more blocks. As usual, the slum and the palace were closely adjacent, the one seeming to require the other.

Again and again he sent his thoughts ahead, trying to wake the sleeping Billings through the urgency of his thought. But the old man's weariness and two days of sleeplessness defeated him. He tried again to contact Mabel's mind and found it no more responsive than Bossy.

That was it, of course! Mabel's mind, at this stage, was reacting in the valence of a machine.

At Mission and New Montgomery, he turned south toward skid row. Ahead of him there was the stir of unusual activity. Although it was near two in the morning, there was a crowd of people gathered in a spot of light which streamed out from the open doors of a saloon. A squad car was parked nearby, but the two policemen standing beside it made no move to interfere in the excitement. This, in itself, was strange, for only the toughest were assigned to the skid-row beats, and they did enjoy using their clubs whether called for or not.

Cautiously, Joe stepped into the shadow of an alleyway, and sent an exploratory wave field ahead. At first there seemed to be little pattern in the jumble of impressions and stirred emotions. Then bit by bit, principally from the thoughts of a pair of young sailors, supplemented by the knowledge of the officers, Joe put the elements of the story together.

The wagon had just carted off a woman to the City jail. That, in itself, would have caused no more than passing interest on the shortline. But the woman had been very young. She had been beautiful. Even allowing for normal exaggeration in the sailors' minds, she was the most beautiful thing they had ever seen.

And she had been stark naked.

She had come strolling off Howard Street. The sailors had just been coming out of the door, and the streaming light had caught her like a spotlight on a dark stage. They had been too stunned even to whistle. A cruising squad car, coming by at that moment, had almost crashed into a fire hydrant before it skidded to an astonished stop.

One of the officers had thrown his his own coat about her while they stood waiting for the wagon. She hadn't spoken a word. She just stood there, looking from face to face, and smiling her strange, sweet smile.

The wagon appeared shortly, and whisked her away. It was all routine. Yet the two officers did not climb

back into their car. They stood there, watching the crowd, apparently waiting for it to disperse or grow unruly. But their expressions were far away. It was not the nudeness, as such, which remained in their minds. It was as if they, too, were still stunned at having seen, all at once, too much beauty.

Even as Joe ran down the alley toward their basement quarters, he knew, with near certainty, it had been Mabel.

At the foot of the stairwell, leading down from the street level, the outer door was open and swinging. He snapped its lock behind him, and ran through their living quarters into the workroom. Mabel's couch was empty. Billings still sat in his chair beside the bed, his head slumped forward in sound sleep.

Bossy was lighted, but silent. Her screen showed two words.

"Problem solved."

X.

Dr. Eustace Fairfax, Consulting Psychiatrist to the San Francisco Police Department, gazed down his thin nose and transfixed the lieutenant with a glare, heightened by polished glasses, in which anger and incredulity were fiercely blended.

"Do you mean to say," he demanded, "that I have been called at this fantastic hour of the night to examine a . . . a . . . a routine case

for the psycho ward?"

"But this isn't a routine case," the harried lieutenant insisted. His own disbelief made him weak in his protestations.

"Bah!" Dr. Fairfax tossed the police blotter across the desk. "I have never seen a more routine report: ' . . . Nude young woman arrested, corner of Howard and New Montgomery —' And you wake me up at three o'clock in the morning! The commissioner will hear of this!"

"Wait, sir," pleaded the lieutenant. "You don't understand —" It was an unfortunate choice of words, for one does not tell a consulting psychiatrist that he does not understand.

Dr. Fairfax, who had turned away and was starting out the door, whirled around.

"And what is it I am incapable of understanding?" he asked, his words as brittle as flake ice.

"This young woman isn't really young," the lieutenant began hesitantly. Then, overcoming his own doubts, he rushed on. "You see, according to the fingerprint records, this woman, Mabel Monohan, is actually sixty-eight years old!"

"Then why in heaven's name do you book her as a young woman?" the psychiatrist asked in extreme exasperation.

"Well, the fact is . . . the Booking Officer thought . . . we all thought . . . she is — Doctor, I'd swear she wasn't a day over twenty-one!"

"Then you've made a mistake, that's all."

"No sir, we didn't make a mistake. The fingerprints checked in every particular, not just one print but all of them. We wired the prints to the FBI in Washington. They check there, too."

"Then the mistake was made when the prints were taken before."

The lieutenant began to get a little heated now. The efficiency of his department was being questioned.

"Mabel Monohan," he said firmly, "has been in and out of this jail for the last fifty years. She has been printed countless times. We called in some of the old-timers. They swear this girl looks like the Mabel they knew forty years ago, ah . . . from seeing her in jail, of course."

"That does it! I'll call the commissioner the first thing in the morning. You may need the professional services of a psychiatrist around here, but not to examine the prisoners!"

Dr. Fairfax's ordinarily nasal voice had risen to a high whine under the stress of extreme anger. He was often angry at people because they contrarily refused to fit in nicely with his theories. And, of course, it was the people who were wrong. The theories had been advanced by the most Eminent Authorities, and proved by carefully selected case histories. His one satisfaction in life was that so many of the laws he had advocated to make people conform to these theories had been

passed — despite strong opposition.

Apparently more laws were needed. He jammed his hat on his head and stalked toward the door. The lieutenant hurried around the desk and caught him by the arm. And was shaken off.

"Please, doctor," the lieutenant begged, desperation bringing sudden firmness to his voice. "I think it is necessary you examine this 'woman tonight. I couldn't reach the commissioner, he's been on a three-day . . . he's unavailable, but when he learns the facts I'm sure he'll agree."

Apparently it broke through the psychiatrist's indignation.

"All right," he agreed, as if he were following rule three and humoring a psychotic patient. "Inasmuch as I'm here, I might as well examine her. But it's a clear case of fraud, or incompetence. I don't need to see the prisoner to determine that!"

He began to get a certain glow of anticipation. Apparently the girl was cleverly pulling some new stunt, and it would be his pleasure to expose her. Laymen simply didn't understand these things; but it was always possible to rationalize symbolisms until one found them fitting into theory. He grew almost pleasant in satisfaction at being a master of intricate reasoning which none but a trained psychiatrist could grasp.

He followed the lieutenant back to the desk. He pursed his lips and hm-m-m'd many times, implying that

all of this was no mystery to him. He studied the photographs taken forty to fifty years ago, clucked over the poor photography, triumphantly pointed out the differences among the photographs, asked how they could be used to compare with the girl when they were not even identical among themselves, expressed his doubts of the whole science of fingerprinting, and thoroughly enjoyed setting the whole stage to prove his theory of fraud. Faithfully he followed the pattern of the scientist determined to interpret the facts to suit the theory.

"Bring her in, lieutenant," he said, when he was quite satisfied that he had encompassed everything in the thick dossier of Mabel Monohan. He settled himself into the lieutenant's swivel chair.

"In here, doctor?" the lieutenant wavered. "Wouldn't you prefer to use the office of the regular psychiatrist, where they've got all the hocus-pocus —" He stopped, aghast at his slip.

"I shall not need the usual equipment for testing, which you term . . . ah . . . hocus-pocus," Dr. Fairfax said with asperity, and chalked it up in his memory for delayed retaliation. "This is a simple case of fraud, and I can handle it right here. Bring her in, and then you leave her alone with me. I am sure she will soon recognize my ability to see through her little game."

His first sight of Mabel confirmed

his belief in fraud. There was simply no art of make-up which could turn an old woman into a young girl, whatever the female gender may wish to believe. This girl had no make-up on at all. And the bright glare of the overhead light showed that she was barely twenty-one. The rough prisoner clothes she wore did not fully conceal her youthful form.

Dr. Fairfax dismissed the lieutenant and the matron with a curt nod.

"Sit down," he said coldly to Mabel, and nodded toward a chair. He smiled with faint scorn as he watched her touch the chair on its arm and back, and then seat herself.

"I am sure you know what a chair is," he said coldly.

She looked at him with a little puzzlement in her fathomless blue eyes.

"Chair:" she said, "Noun. English language. Movable seat with four legs and back, for one person, used by humans."

"So that's the way it is to be," he said cryptically. "What is your name?"

"Mabel," she answered.

"Address?"

She gave the address of her apartment off Howard Street. It checked with the dossier.

"How many times have you been arrested, Mabel?"

"Thirty-two," she answered instantly.

He blinked. This was a little out of

pattern. She could easily get detailed information about the life of the old woman from other sources, but even the old woman would not remember so precisely how many times she had been arrested; not when there had been so many over such a long period of time.

"How do you know that?" he shot the question at her abruptly, expecting to see the first signs of confusion when she realized she had gone too far; that she shouldn't have known it so accurately or instantly.

"It is a fact," she said, without any confusion whatever.

Well, whatever her little game, she was a cool one. This might prove interesting.

"And I suppose you know all the facts," he said, emphasizing his sarcasm.

"About myself, yes," she answered. "But I know only facts which have a relationship to me. I do not know all facts. Bossy says all facts are not yet known."

He blinked again. Somehow the name Bossy seemed familiar, but he could not place it. He seldom read the news, or followed any of the activities of run-of-the-mill people. Since they contrarily refused to fit theory, it was less bothersome simply to ignore them. Then the concept of Bossy clarified.

Of course! It was a childish name for a cow! He marveled at his acumen, and stored it away. It would come in handy to trip her; revealed a farm

background, which she couldn't suspect him of knowing. Oh these silly people who thought they could fool a psychiatrist!

He would get her to talking. She would make further slips, and then when he pointed them out to her, she would realize she was no match for him. The confession would be easy.

"What is this all about, Mabel?" he asked with deceptive gentleness.

"I'm not sure," she said. "I have assumed it was a dream. Bossy says the dream state in humans is likely to be no more than a random excitation of synaptic patterns creating an irrational sequence of visualization. All this is certainly irrational."

He felt slightly uneasy, and not only because it violated the subconscious symbolism theories of Freud, which only a psychologist could interpret—at fifty dollars a seance. This sort of thing must be scotched immediately.

"And a cow told you all that?" he asked bitingly.

"It must be a dream," she responded. "Or the alternative is that you are insane. Your question is completely irrational. Cows do not speak a language intelligible to humans."

He grasped desperately at rule five: Never allow the patient to guess you are not completely master of the situation. He decided to use technique B: Switching the frontal attack.

"Why did you appear on the street without any clothes?"

"My therapy was completed. I wished to evaluate my environment. I did not realize it was cold enough for my body to need additional protection beyond that furnished by my skin."

He gulped, and stared at her intently. She was mad. Stark raving mad.

"Are you sixty-eight years old?" he asked scornfully.

"I have no age now," she answered simply.

"Answer my question," he commanded sternly.

"I did."

"Your answer has no meaning. You are either sixty-eight or you are not."

"That is Aristotelian logic," she said reflectively. "Bossy says humans can never understand themselves through Aristotle—"

"Bossy says! Bossy says!" He all but screamed the words at her in exasperation. "Look here, young woman—"

". . . Telian logic," she continued. "Reasoning along that line is comparable to Zeno's proof that motion does not exist. This is a most interesting dream in that your thought-processes are consistent with those currently in vogue in the cult of psychiatry. By any chance, do you imagine yourself to be a psychiatrist? Bossy says —"

Dr. Fairfax thrust himself to his feet, and almost ran to the door.



"Take her away," he told the waiting matron harshly. "Lock her up alone for the night. I will have to see her again when she is less disturbed. And she's dangerous. She's very dangerous!"

The old matron looked at him with veiled contempt. For thirty years she'd been handling her girls. She knew a sweet, innocent, young thing when she saw it. They were saying this was old Mabel. Well, they were all nuts — including the psychiatrist.

"It's all right, dearie," she said soothingly, and put her arm around Mabel's waist to lead her away. Dangerous, indeed! "It's all right, baby. You can depend on old Clarkie."

"I know," Mabel said. "You always were a good scout. Twenty-two years ago, the last time I was here, you got my attorney for me. There was a reform ticket in office, and they were holding me incommunicado."

The matron drew back from her, turned pale, tottered, and clung to the wall.

"Nobody ever knew it was me," she gasped. "I'd of lost my job. Nobody knew except Mabel, herself. And Mabel wouldn't have told nobody — not nobody!"

"I told you she was disturbed, dangerously disturbed!" the psychiatrist snapped. "Now take her away!"

Tentatively at first, then comfortably, the matron took Mabel's arm and guided her down the hall.

"But you can't be Mabel," the

matron was saying. "You just can't be. Even then, Mabel was getting old and fat. Tell me," she said desperately, "tell old Clarkie, - dearie. How did you do it — Mabel?"

The lieutenant came back into the hall from another office, and saw the psychiatrist leaning against the door jamb.

"What do you think, Dr. Fairfax?" he asked brightly.

The doctor straightened himself, drew himself up, and looked down his nose professionally.

"A clear case of . . . a clear case of—" He was unable to find, in the pat little repertoire of psychotic patterns, a name which precisely fitted this kind. He would have to rationalize it out through symbolisms until it neatly fitted something or another before he expressed his diagnosis. He must be sure to use the established and orthodox patterns of symbolism manipulation so that other qualified psychiatrists would confirm him — if it came to that.

"A layman wouldn't understand," he finished, loftily.

XI.

The long corridor leading to the courtroom was packed with jostling, noisy people, mostly women. This was not a trial. It was only a hearing for the purpose of setting Mabel's bail. But old Clarkie had talked again, and this time to reporters.

The papers hadn't had much time to work on it before the deadline of morning editions, but they'd done their best. And the results were quite satisfactory. Most of the articles about this old woman, who had turned into a young girl, were written with tongue-in-cheek, for, as frequently occurs with reason, the editors did not believe the stories turned in by their reporters.

But the public believed. The public wants miracles. The public demands miracles; and if one source ceases to provide them, they will turn to another source which seems to accomplish the spectacular. Even while they resented and opposed the scientific attitude, they lapped up the miracles which this attitude accomplished with glee.

The Fountain of Youth, long denied consciously, was still the great secret dream. They believed it because they wanted to believe it. They wanted to see this young and beautiful girl who, up until her disappearance ten days ago, had been a fat old woman. That hers had been an unsavory reputation somehow added to the credibility.

"If an old thing like that can do it, then I, much more worthy, can also do it," was the tenor of the refrain in every woman's mind.

Joe Carter slowly edged his way along one wall toward the high double doors of the courtroom. He gasped as a stout woman dug her elbow into his stomach, and then forgot about the elbow when a spiked heel ground

down on his foot.

The jam grew tighter as he neared the door, and further progress seemed impossible. A perspiring bailiff stood against the door, and stared unhappily at the surging crowd.

"No more room inside, ladies," he kept insisting. "You might as well turn around and go home."

Groans, catcalls and derisive laughter answered his words. This was a mere male, and they knew and exercised their power to give him a bad time.

"I can't go home like this," one woman yelled. "My old man wants me to look like eighteen again to-night!"

"Eighteen!" another woman shrieked. "I'll settle for thirty-five!"

"Let us see her!" another yelled. "It won't cost you anything to just let us see her."

"It ain't fair," screamed another.

In desperation, Joe singled out one of the loudest of the women and fed the idea into her mind that the hearing had been postponed until two o'clock.

"Why you —" the woman suddenly yelled at the bailiff. "You know that hearing's been put off, and you just let us stand here!"

"Put off?" someone else shrilled. "They've put off the hearing?"

"Of course they have!" the first woman yelled again. "The politicians want to hog everything for themselves. Come on, let's go to the mayor's

office. Let's see about them holding out on us taxpayers!"

The hallways began to clear as the word spread. The tightly packed knot of people around the bailiff began to loosen, untangle itself. Joe squeezed through the first break and stepped up to the bewildered bailiff.

"Good work," Joe whispered his congratulations. "It could have been a riot if you hadn't acted just in time. I'll not forget to mention it!"

The bailiff, without realizing quite why, opened the door just wide enough for Joe to slip inside. Several of the women saw it, but the massive doors closed off their rising clamor.

The courtroom was relatively quiet. A bitter legal wrangle was going on in front of the bench; but Joe ignored it for the moment while he searched for Mabel. He missed her as he swept the fenced-off arena in front of the judge's box the first time. Then he spotted her at the counsel table where she was almost hidden by a massive gray-haired man who stood behind her chair and was holding up his hand to catch the judge's eye.

"Your honor," he intoned, as the judge looked his way, "to my colleague's objections I would like to add the further objection of complete irrelevancy. Appearing unclad on the public street is a simple misdemeanor. Our client has been charged with nothing else. The city attorney has failed to cite a single statute which

would deny our client right of bail. Indeed, it has been a deplorable miscarriage of justice that she was detained overnight!"

The city attorney dabbed at his flushed face with a wadded handkerchief. It was true she had been charged with nothing else. A bad oversight, considering all the things they had to choose from, and somebody would pay for it. But then, nobody had expected the most important legal firm in San Francisco to appear suddenly in Mabel's behalf.

"The distinguished defense counsel misrepresents the obvious meaning of my words," he protested uneasily. "I would not deny the defendant bail. I ask only, in the public interest, that she be detained in the psychiatric ward pending further investigation. I respectfully request the Court to appoint two independent psychiatrists, acceptable to the defense counsel as well as to my office, to determine the fitness of the crimin . . . prisoner."

The judge looked appraisingly from one speaker to the other, then lowered his eyes and scribbled small doodles on the pad of yellow paper in front of him.

Joe knew he was thinking of forthcoming judicial elections. Usually it paid off to play along with the machine because the general public didn't know one judge from another and marked the handiest spot on the ballot. But this case was different. How he acted could really help or

hurt his chances in the election.

In either event he could only adhere to the letter of the law; but then for every yea in the law there was a nay, and it always boiled down to simple expediency. Like a psychiatric diagnosis, it could always be juggled around to fit anything you chose. He'd better play it cautiously. He looked again toward the city attorney.

"Have you any grounds for questioning this young . . . this woman's sanity?"

"There was prima-facie evidence that she was completely unclad when arrested on a public thoroughfare —"

"Incompetent, irrelevant and immaterial," snapped defense counsel instantly. "Nudity is not prima-facie evidence of insanity. If this case should go to trial, we will prove beyond all doubt that our client was merely sleepwalking."

"That I would like to see," the city attorney mumbled under his breath. Then aloud, he persisted, "In the second place, a Consulting Psychiatrist has already conducted a preliminary examination of the defendant. We would like to call him to the stand at this time."

The judge nodded. He must be fair to both sides, allow no criticism to come his way from a higher court.

"You may proceed."

While the psychiatrist was being sworn, and establishing his credentials, Joe tried to reach out and make psionic contact with Mabel. He failed

in a most baffling way. He seemed to touch the periphery of her mind and then to lose himself in the characteristic pattern of a dream. Did she think she was still dreaming? Her detachment, her lack of interest, her negative somatic reaction to the whole procedure baffled him. For the true dream state was anything but lacking in somatics. In the conscious state the human mind is seldom capable of reaching the heights of true horror often found in a dream. He came back to the witness who had been speaking.

"You say you tried to examine the defendant," prompted the city attorney. "You used the word 'tried' advisedly?"

"Certainly," snapped the psychiatrist. It was unthinkable that he should use any word without self-advisement. "I say 'tried,' because the patient was too disturbed to be cooperative."

"Would you say she exhibited the characteristics of a rational person?"

"I would not!"

"Did you question her about her age?"

"I did. She said she had no age."

"Did you ask her why she appeared on the street nude?"

"I did. She answered that she did not know it was cold." His expression showed plainly that a belief clothes were necessary simply to keep out the cold was all the evidence they needed to establish her insanity.

Apparently the city attorney thought so, too. He nodded significantly toward the judge and relinquished his place at the stand. The defense counsel approached the psychiatrist in the manner of an experienced big-game hunter who is called upon to shoot a rabbit. He put one foot on the step in front of the witness stand, carefully drew up his trouser cuff, and leaned toward the psychiatrist in a conversational manner.

"Do you believe that the defendant has somehow been able to recover her lost youth?"

The psychiatrist flushed angrily. He wondered if it would be possible to suggest a law which would not permit defense counsels to question the judgment of a psychiatrist.

"No, I do not believe it," he snapped.

"Do you then discount the evidence of the fingerprints? The photographs? The testimony of numerous people who identify her?"

"I am convinced all of this is a hoax!"

"And is, therefore, something which no rational person could believe?"

"Such a claim to rejuvenation is beyond the credibility of a rational man."

"Then if the city attorney and the Court were to place some credence in the defendant's regeneration, you would hold they are not rational men?"

A titter swept the courtroom. Sev-

eral women clapped loudly. The psychiatrist felt called upon to defend his profession.

"I have not been called upon to examine the city attorney and the Court —"

The implication was not lost upon the judge that this witness assumed the possibility that everyone was insane except himself. The defense counsel preferred to leave it there before the impression could be corrected.

"One more question, then," he said hurriedly. "Do you believe a woman's reluctance to tell her age is a sign of insanity?"

The courtroom roared with applause and laughter. The psychiatrist's cheek twitched under the indignity of a layman's doubt, but he said nothing. The judge, sensing at last the way the public would respond, permitted himself a small, judicial smile. Joe attuned himself to the judge's relief, mellowed and broadened his mood, fused a warm and noble valence into the judge's concept of himself.

. . . The wisdom of a Solomon
. . . utterly fair and incorruptible
. . . stalwart and courageous defender
of human rights against the oppression
of a growing police state . . .
kind and compassionate —

His head came up as if he were posing for a photograph.

The defense counsel turned impressively toward the bench.

"Your honor, I trust the Court, in its vast wisdom, agrees with us that

this defendant should not be subjected to further indignities. She has clearly undergone a harrowing experience. She needs a period of rest. In good time, medical science will be able to develop the facts about her case, which could be of great benefit to humanity. All of us should cooperate to that larger cause. In the glorious pages of history, we must not be found wanting!"

The judge was regretful that he had barred news photographers from the courtroom. Really, this moment should be caught and recorded for the pages of history.

"Meanwhile," continued the defense counsel, "I withdraw our request that the defendant be released on bail."

The judge, the city attorney, the psychiatrist looked at him in surprise. The courtroom held its breath.

"Instead I do petition the court to dismiss the misdemeanor charge against her entirely!"

The courtroom exploded from silence into thunderous applause. Joe did not need to intensify it with broadcasted waves of mass psychology feedback. The counsel knew his rabble-rousing, well.

The judge tapped his gavel and crinkled the character lines around his eyes with kind and mild reproof. He held up his hand for silence, and the crowd leaned forward in anticipation. He dismissed the charges. He arose in statuesque dignity and re-

tired to his chambers amid the roar of approval.

With a courtly gesture, the defense attorney took Mabel by the arm and hurried her out of the room, refusing to pose outside for the newspaper and television cameramen. But reporters did stop them, momentarily, on the front steps. They answered one, and only one, of the barrage of questions.

"Who does your firm actually represent in this case?"

The lawyer smiled a bland, courteous smile.

"Why, the defendant, of course," he answered.

But behind the smile was the name Joe had been seeking — the name of Howard Kennedy, the multimillionaire industrialist who had given the newspaper that surprising interview in defense of Bossy.

XII.

Kennedy Enterprises, Inc., occupied all fourteen floors of the modernistic Tower Building in the center of the financial district. This was the home office, the center of an organization vaster in wealth and power than many nations. The government of this organization often was the government of many nations.

As Joe stood in the lobby, and scanned the building directory, he realized for the first time the scope of these enterprises. In the long list of Kennedy Corporations in the di-

rectory board, there seemed to be provision for almost every human activity.

Of course, like everyone else, he had always associated Howard Kennedy with vast and sometimes speculative industrial operations. Now, alphabetically listed, he saw corporations covering everything from mines to trinket sales. There were other corporations, too, from research foundations to philanthropy. One could only guess at the research, and the personnel, back of these enterprises.

Obviously, Howard Kennedy was one who had not been oppressed by opinion control. As sometimes happens in a tradition-bound and expiring civilization, here was a man who seemed to have stepped directly out of a past era, the era of bold pioneers who were unafraid to explore; who had not sold the birthright of man's rise to the stars for a mess of security.

Somehow he had not been crushed, in spite of the many attempts. Joe did not know too many details; his own interests had been far removed from the industrial world; but he did recall the many congressional investigations when some farmer boy congressman decided this would be a way to get his name in headlines; the underground rumblings of lawsuits among industrial titans; the charges of trusts and cartels flaring into headlines one day and not even followed up in the back pages on the next.

No one had been able to get Howard Kennedy, bring him to heel, make him conform to the all pervading grayness of mediocrity. He was a giant in stature and as yet they had not been able to bind him to the dirt with thousands of tiny ropes.

This was the man who, a few days previously, had dared to come out in favor of Bossy in an editorial.

And this was the man whose attorneys had somehow learned with extraordinary speed about Mabel; had stepped in and taken over her case even before Joe and Carney had been able to get Mabel's own attorney out of bed.

This was the man who now held Mabel, somewhere, like the high trump card in a game. Obviously, the editorial had been a bid to Billings and Hoskins: "Come, let us negotiate. I am interested and will be fair."

Now, characteristic of his operations, Kennedy held the high trump, and could afford to wait in the certain knowledge that they would have to come. In some way, he had connected the phenomenon of Mabel's rejuvenation with Bossy.

The negro starter, who controlled the battery of elevators and winking red lights, had been watching Joe indulgently, taking him for just another job applicant. He approached now and spoke with florid but sincere courtesy.

"May I help you, sir?" From the moment of application, Kennedy's

men were treated as something very special, set apart from the common herd of man, and thereby from the first day developed a fierce and single-minded loyalty.

"Which is Mr. Kennedy's personal office?" Joe asked.

The starter's eyes blinked twice. Then he smiled indulgently. This was a green one, indeed, to think he had to see the big boss himself just to get a clerk's job somewhere.

"You sure you don't want the personnel department, sir?" he asked.

"I want to see Mr. Kennedy, personally," Joe said with a smile, "and not about a job."

Without further hesitation, the starter walked him over to a closed elevator, and punched a signal. The doors opened immediately.

The Eighth Floor Receptionist was not so indulgent. Jim, the starter, was too easily impressed. He let every Tom, Dick, and Harry come to the executive offices. She regarded Joe with the politely hostile stare which receptionists everywhere have perfected for the caller without appointment.

"Mr. Kennedy?" she asked incredulously. "Which Mr. Kennedy?"

"Mr. Howard Kennedy."

"But which Mr. Howard Kennedy?"

The girl's voice betrayed just a hint of the triumph it always gave her to spring this befuddling question on the uninitiated.

Joe could not resist the temptation to send a sudden, horrifying shaft of doubt into the neat complacency of her mind. Suddenly, without knowing why, she realized this young man was a Very Important Person. And she had been dangling him like a fish on a line. And just the other day, when she had thought a certain king was just a salesman who had got past the starter —

She began a hurried tactical withdrawal from her position.

"You mean Mr. Howard Kennedy, II?" she asked helpfully. "You're a personal friend? A fraternity brother? Someone —"

"Of course not," Joe said coldly. "I'm afraid Junior couldn't help."

"I'll get Mr. Kennedy's secretary," the girl gasped. She forgot the intercom on her desk. She forgot the page boy standing close by, waiting to run errands. She all but ran down one of the halls which branched off the reception room.

In less than a minute she was back. An older woman accompanied her; a serene and unhurried woman with streaks of silver in her beautifully coiffured hair. She appraised Joe calmly, and Joe knew she had instantly catalogued him as a total stranger. And probably he was not a king.

"I had to see the young man who could make Betty forget the years of training she's had," she said to Joe with a smile.

The receptionist, a step behind her, blushed furiously.

"But Mrs. Williams —" she faltered.

"It's all right, Betty," the secretary assured her. "In such an emergency —"

She turned to Joe.

"Now, young man, I understand you wish to see Mr. Kennedy, Senior, at once, and without an appointment. That is a virtual impossibility. Surely you must realize —"

She, too, faltered to a stop when Joe, instead of apologizing for brashness, picked up a pad from the receptionist's desk, tore off a sheet, and wrote on it one word: *Bossy*. He handed the sheet to the secretary.

"Here is my ticket to the holy of holies," Joe said with a smile.

She took the note, coldly to show her displeasure at his quip, and prepared to be disdainful.

"*Bossy*," she repeated slowly. "*Bossy* —" She did not even blink.

"Please be seated," she said gravely. "I'm sure Mr. Kennedy will want to break off his conference. He has been expecting . . . someone —"

Howard Kennedy's office was the largest and brightest Joe had ever seen. One entire wall was in glass, and it looked out across the city toward the rising arc of the Bay Bridge, which was now a ghostly shadow in the morning fog which hung over the water.

Mrs. Williams seated Joe in front of the great desk.

"Mr. Kennedy is on his way from the conference room," she said. She left him alone, and closed the door firmly behind her.

The huge desk, where Joe sat, was symbolic of the man. The entire top was a slab of glareless glass almost three inches thick. A simple pen set and a pad of ruled yellow note paper were the only items on the desk. There was not even a telephone.

The thick rug and the three walls blended with the glass wall in a harmony of soft blue. There were no pictures or decorations on the wall of any kind. There were no trophies, no photographs of the occupant in football uniform, none of the symbols through which the average executive expressed his determination not to mature beyond the age of sophomore.

Joe heard a door open softly behind him, but he did not turn around. He knew Kennedy had come in, and was studying him. And this was no time for ethics. Joe penetrated, unobtrusively. The mind he encountered reminded him of hammered steel. It was a mind of unmeasured strength, an orderly mind thoroughly under control. And it was the mind of a man who had lived for a long time.

He heard footsteps brush by his chair, and then he saw Howard Kennedy move with an incredibly light, sure step around the end of the desk. Even without precognition, Joe would

have recognized the tall, spare figure, the jutting hawk nose, the craggy chin, the totally bald head.

Kennedy's glance took Joe apart and snapped him back together again. His conclusions were not bad — for a psibind.

"You're the student," Kennedy said in a soft, dry voice. "Carter, isn't it? Joe Carter?"

Joe nodded.

Kennedy smiled, a little wryly, a little disappointedly.

"I had thought it would be Dr. Hoskins, or even Dr. Billings," he said frankly. "I'm sorry they didn't trust me enough to come."

"I came," Joe said without any inflection.

Kennedy put both elbows on the desk and leaned across it toward Joe.

"Look here, young man," he said with a disarming smile, "are you sure you know what you're mixed up in? Oh, don't misunderstand me," he smiled again. "I know that students sometimes get very loyal to their teachers, and that's a good thing, but there's such a thing as carrying it too far, being made a cat's-paw."

It was a good speech, well calculated to undermine him with doubt. It might have succeeded if it had not been so far from the mark. His smile was the tolerant, and a little regretful, one of the man with fifty years of empire building behind him toward the student who has read a half dozen books and now feels himself

fully equipped to compete. His mind was a reflection of his face. If there were a trace of guile there, then it was of such long practice that it had become a part of him.

"I think, sir," Joe said respectfully, "we should not start out by misunderstanding where we stand, or who is in the arena."

Kennedy's eyes opened a little wider.

"Hm-m-m," he said, and leaned back in his chair. "It appears all of us ministered the situation. We have assumed, all along, you were a dupe. Actually you were indicted only because it was hoped that you could give us information if you were apprehended first. Mr. Carter, I apologize. None of us have paid much attention to you."

"That is not like you, or your organization," Joe said easily.

"Why haven't you come before? No doubt you read my interview about Bossy?"

"Yes, sir. We did. Professor Hoskins wanted to come then, and Dr. Billings would have agreed. But I convinced them we were not ready. We had a . . . a certain test to make."

"And you have made it?"

"You know we have, Mr. Kennedy. You have Mabel."

Kennedy nodded in appreciation.

"That's out of the way then," he said. "I'll not waste time with denying it, or asking for particulars on how you did find out. I like to get right to the point. As you say, I have

Mabel—and you have Bossy."

"Why do you want Bossy, Mr. Kennedy?"

Joe was delighted with the speed at which Kennedy formulated and rejected answer after answer. And deep in his mind, as if it occupied a shrine set apart from everything else, the real answer lay like a jewel. It was not power, not even immortality as such, at least not these things for their own sake. Kennedy had thought, in starting this interview, to have everything his own way. Two misty minded professors and a boy; Kennedy had thought these were his opponents. Should he now let Kennedy know, so that they would not waste time talking protection, sanctuary and some little job in some obscure corner?

"You want Bossy for the same reason you built Kennedy Enterprises," Joe said crisply.

There was a flurry of excitement in the old man's mind that the thrust had been so true. There was a tinge of fear—not for any rational reason, but only because it was his own secret carefully kept all these years.

"Shall I tell you why you want Bossy?" Joe asked. He was treading on dangerous ground. A man does not take kindly to a revelation of his innermost secrets. But Kennedy was not a dealer and trader for nothing.

"If you think you can," he challenged. No matter what wild idea the young man advanced, he could throw

back his head and laugh, then scourge him with some remarks of pity.

"It was rather surprising that a history major would become so pre-eminent an industrialist," Joe began, then added dryly. "You see, I looked you up."

Kennedy sat silently, looking at his fingernails. This young man really was astute.

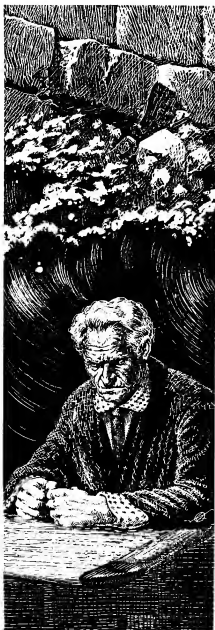
"It occurred to you that the cycle of civilization, being born and dying, again and again, might be escaped."

Reluctantly, Kennedy nodded his head.

"Along with a great many others you recognized that opinion control always precedes the death throes. You saw the dark ages coming. You saw it had already descended upon Russia whose tactics we were imitating so diligently, even while we fought her so bitterly. So you conceived an idea."

Kennedy raised his head and smiled quizzically, as if he could afford the luxury of being amused at himself. At least the young man was being merciful with euphemisms.

"You conceived of building an island in a sea of chaos. You built power and you built wealth. Mr. Kennedy, you know as well as I that such a thing is not very difficult if one dedicates himself completely to that purpose. Your idea was to set up laboratories, foundations, all kinds of grants under your protection, where men could continue, at least secretly, to think. You thought to preserve our civiliza-



tion, in spite of the efforts of the pressure groups to destroy it. And now you want Bossy to further that purpose.

"You want immortality because you know that empires dissipate and die when the strength has gone out of them—as will yours, after you die."

"You are a . . . a very shrewd young man," Kennedy said, almost with a gasp. "But you forget that I will not really die. I have a son."

"Junior?" Joe showed a suppressed smile.

The last defense was down. Every man has his Achilles heel, an area where he is defenseless, where he cannot bluff and bargain. Carter had gone directly, without hesitation, to the very center of the shrine, and even exposed the worm which would chew away its foundation and send it toppling. When he spoke, he was not sure whether he was bargaining or pleading for understanding.

"Do you think that was a bad ideal?"

"I think it was a very admirable one," Joe said sincerely.

Kennedy's face lighted with a warm smile, almost a grin of companionship.

"Then we should have no trouble in arriving at terms," he said with a vast relief. And was totally unprepared for Joe's next remark.

"Mr. Kennedy," Joe said, after a moment's reflection, "I came here prepared to bargain. I never had any

intention of selling Bossy to you, or even permitting you to have any say about Bossy's uses. I intended to ask for your legal protection—I recall that you were indicted twenty-three times one year—and for a grant where we could go on working without oppression. I took this stand because I assumed your motives would be selfish; that you would agree to almost any terms, knowing fully well that you could twist them around to your own devices any time you chose. And that it would be up to me to thwart you while I still held you to your bargain."

Kennedy began to chuckle. How he would like for his son to have the temper and shrewdness of this young man.

"But now," Joe said, and cut the chuckle short, "I'm afraid I don't have anything to bargain with."

Kennedy sat upright in his chair.

"You have Bossy," he said harshly.

"Bossy is not what you think," Joe answered. "First, I am quite sure that Bossy cannot give you immortality."

"There's Mabel."

"Second, your island in chaos is seeded with the same destruction it finds all around it. Tell me," Joe said, but it was a rhetorical question. He already knew the answer. "You had men, many men, working on Project Bossy back at the university, didn't you?"

"Yes," Kennedy nodded.

"And since then you have been trying to duplicate it in your own

laboratories here in town."

"Yes." Kennedy's eyes were wary.

"And they are failing."

Kennedy slumped in his chair.

"Bossy can only give the right answers when the right questions are asked," Joe said softly. "Your men, for all the protection you give them, are a product of our times. They do not know the right questions to ask—and neither do you, Mr. Kennedy."

"Name your price, young man. Whatever it is, I'll pay it."

"First, of course, there's the quashing of the indictments."

"Done."

"A place for all three of us to work, unhampered. Your people to take care of the public reactions, turn them favorable to Bossy, keep these immortality seekers off our necks."

"Done."

"Those are just preliminaries. Here comes the price."

"Name it."

"Give up your dream."

Kennedy sat with his chin pressing against his chest. For a full five minutes he sat as if he were asleep—more, as if his heart had stopped beating. He turned in his chair, then, and looked out of the huge window at the city beyond.

"That price I am not prepared to pay," he said, without looking at Joe.

"Think back, Mr. Kennedy," Joe prompted. "Think back through all the eras of history—the major ones,

the tiny obscure ones known only to scholars. Can you think of a man, ever, who was capable of fashioning the future development of mankind to suit his own idea of it—no matter how noble that ideal may have been? Wouldn't that be just another form of opinion control—no matter how splendid the conception?"

Kennedy did not turn around.

"It takes a great deal of faith in mankind to keep from directing it the way we think it should go," he said at last.

Joe said nothing.

"I will have to think it over," Kennedy said, after another long pause. "As for your preliminary conditions, they're granted anyway. Bossy would have great usefulness in minor things. I'll be amply repaid. As for the price, the real price you ask—I'd never quite thought of it that way before."

He did not see what this would have to do with immortality, for his scientists had told him, in accounting for Mabel, that a way had been found for cell renewal and regrowth. They, along with everyone, had been alerted by the police after the three thefts of plasma. They had been expecting some new biology manifestation. They had all known that Bossy was in the area. It had not been too difficult to reason from the news about Mabel back to Bossy. But cell renewal could have nothing to do with his ideal of what was best for man.

"I will have to think it over," he

said again after a long pause.

He whirled around then, and his face became alight with the thing he knew best—the way to get things done. He punched a concealed button at the corner of his desk. Almost instantly, the door opened and Mrs. Williams came through. There was no curiosity in her expression, but her eyes could not conceal it.

"Mr. Carter has arranged for Bossy to come under our protection," Kennedy said with a slight smile, knowing that she would interpret it correctly that he had been unable to buy Bossy outright. "Mr. Carter and his associates are to have every protection—from any source whatever, including myself. Mr. Carter is to have any or all of the resources of this entire organization at his disposal."

Involuntarily, Mrs. Williams' eyebrows lifted. This was a deal beyond all deals.

"This is to be put in contract form?" she asked, hardly able to make her voice sound.

"That won't be necessary," Joe said.

"Humph!" Kennedy snorted. "First stupid thing you've said, young man."

"Is it?" Joe asked, with a twist of his lips.

"No, dammit," Kennedy said grudgingly. "Contracts can be broken. My word can't."

"That, too," Joe said softly, "might become a price."

Kennedy flashed a warning look at

him. There were some things, a few, that even his secretary didn't know.

"First thing to do," Kennedy said, "is get out a writ. Send down an armored car . . . er . . . wherever Joe says, to pick up Bossy. Better send along a big police escort—we don't want trouble with the law trying to impound it or something."

He turned away from her to Joe.

"I suppose you want to see Mabel right away?"

"Of course."

"See that he's got a car, a driver, bodyguards. Cancel any appointments for the rest of the day. I want to think," Kennedy instructed Mrs. Williams. Then to Joe, a little sarcastically:

"I suppose I'll be allowed to think?"

"Yes, sir," Joe laughed. "That is, until you decide you want immortality."

XIII.

Carney had read the papers; the first issues, and the following extras. He did not believe what he had read. Mabel was old and fat and slovenly; not that it mattered, you didn't notice these things after you got to know Mabel the way she really was. But they had just got things screwed up over at the jail when they said she was a young woman. They were always getting things screwed up over at the jail. There was hardly a man on the shortline who hadn't served at least

one rap he didn't deserve just because they always got things screwed up over there and would rather see a man do time than admit they were wrong.

He didn't understand why this firm of big lawyers had stepped in. Her own lawyer had always been good enough, and his father before him. Carney could understand why he hadn't been in a hurry. Mabel knew the ropes. It was a simple matter to get bail for her. He'd take care of it when he got around to it. And then when he did get to the jail, this other bunch of lawyers already had things sewed up. They just laughed at him down at the jail and told him to go fly a kite.

Everything was all screwed up. And yet, there were some things about it that Joe and the professors weren't telling him.

The streets around Third and Howard were swarming with people. Everybody had read the news. Even guys who never showed their faces in the daylight were out on the street today. And Carney was a marked man. Everybody on the shortline knew he was Mabel's best friend. They hovered around him like flies, they clung to his arm to show they were intimate with him. They were like Hollywood name-droppers in their eagerness to show their friendship with the great.

There was no chance for him to go to the professors to ask them for the real low-down on Mabel. He had even been unable to speak to Joe, when Joe had come back from the bail hearing.

He did not dare call attention to the area where Bossy was hidden by appearing interested in it.

The rumors got wilder and wilder. Mabel hadn't been naked. The real truth was that Mabel had been seen in flowing robes of white. Mabel had huge shining white wings. Mabel had been seen flying around the jail, and then around Civic Center. Thousands of people had seen her flying around the City Hall, the Opera House, the War Memorial. There were a lot of photographs. The reason the newspapers didn't print them was because they'd had orders from higher up.

The rumors were not hard to believe. Every man on the shortline could remember some good thing Mabel had done for him. A free hand-out here, a grubstake there, and that time she had sent her own lawyer to defend old Annie in the shoplifting rap. They had always known she was an angel in disguise.

They clung to Carney, they rushed to him with every new rumor. At first he, too, had basked in the warm glow; then as the rumors grew wilder and wilder he became more and more fearful. The urgency to see the professors, find out what really happened, was like a gnawing canker. But he could not shake off his arm clingers.

Nor was the crowd solely shortline people. All through the morning, sightseeing and curiosity mongering people had been coming from the other side of Market Street. They

walked the same streets, rubbernecking at buildings they had seen a hundred times before, buildings reputed to be owned by this terrible old harri-dan who had become young and beautiful. They walked the same streets, they brushed against the shortline crowd, a pillar-of-the-church bumped into a-life-of-sin. But they did not mingle.

They, too, had their rumors. They say she was head of the biggest dope ring in the world. They say she had a tie-up with all the steamship companies and shipped out ocean liners filled with nothing but young, innocent girls for foreigners. She was a Russian spy. This whole thing was a plot to get more spies. No telling what goes on back of that Iron Curtain. Wasn't there something about keeping a chicken alive for a hundred years?

A bright young man supplied a name.

"Pavlov," he said. "And it was a chicken heart."

The rumor spread up and down the street. The Russians had been able to keep all kinds of animals alive for hundreds of years. So why not humans? The young man was pressed for more details. In his sudden exaltation to the role of an Authority he dredged down in his mind for more.

"Spemann and Sholte," he said, "succeeded in taking scar tissue from a salamander's tail and growing a new head with it."

What was a salamander? Well, it

was a sort of lizard, a water lizard. Lizards had been on the earth for millions of years. For forty million years the reptiles had ruled the earth.

What these statements had to do with the case of Mabel he did not say. Like most learned young men, who enjoy only the briefest second of attention before the spotlight sweeps on, he spouted facts at random to impress everyone with the superiority of his mind.

The facts he spouted were handed from mouth to mouth, and minds, using the powers of reason and rationalization, wove them into a coherent pattern. The scientists had lizards who had been alive for forty million years. The secret of Mabel's transformation was lizard blood. Spemannovitch and Sholtekoff had found the right recipe.

You take lizard blood and—

At first the recipes were given away freely. Then they began to sell. The prices mounted, higher and higher, as the bidding grew.

Rumors and people were progressing normally.

Never far away from the entrance to the hide-out, still hoping he might avoid all the eyes upon him, the rumors circulating around him, Carney saw Joe come out again, after having spent an hour with Hoskins and Billings. Before he could catch Joe's eye, the young man disappeared in the crowd. Now it was noon, and still

Carney had heard nothing believable about Mabel.

For two hours nothing more happened, except the crowd got thicker and thicker. By process of mental osmosis, the word got around among the curiosity hounds that Carney was Mabel's old lover. The cameras focused on him. He was pressed for autographs. He was like a man trying to escape a nest of persistent hornets.

Relief came at last. For the first time in his life, Carney welcomed the sound of police sirens. The whole shortline, always tuned to the sound, heard them first and began to look about for innocent action patterns to occupy them and account for their presence on the street. The rest of the crowd, now outnumbering the regulars by five to one, became conscious of the sirens.

They couldn't help noting them. No one on the shortline could remember when such a racket had been made in conducting a raid. It seemed to center about three blocks up the street from where Carney stood. From possible speculation to an absolute certainty in less than a half a minute, the rumor had it that another naked young woman was being picked up. Like a rush of flood waters, the crowd swept in the direction of the racket.

For the first time, Carney was left standing alone. The urgency for seeing the professors was greater than his curiosity. And again he was denied.

Even as the last of the crowd milled

out of the area, an armored truck accompanied by four police cars and a private car, quietly crept down the street and down the alley. They stopped around the entrance to the hide-out. This was the real raid. The other was a false alarm to draw the crowds away.

Carney pressed himself tightly into a doorway and peered around its corner with tears of frustration streaming down his cheeks. Now they were going to take away the professors and Bossy, and then he couldn't find out what had happened to Mabel. He was certain now that something had. Otherwise, she would have come back to the comfort of her old apartment long ago.



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The police climbed out of their cars and stood in a semicircle around the entrance, with tommy-guns pointed outward. A chauffeur got out of the private car. He opened the rear door. A big young man sprang out and hit the sidewalk in an alert fighting pose. His hand was in his coat pocket, and his face very clearly stated his sentiments.

"If I must die, it will be for a noble cause."

Joe came out of the car next. And behind him another young man, ready to fight, appeared. Carney stared in disbelief.

Joe was not handcuffed!

Joe motioned to the entrance, the stairwell. Carney became suddenly sick. He fought down the urge to vomit. Plainer than any words, Joe's actions showed he had turned stoolie. He was conducting a police raid on his own hide-out!

But the police stayed where they were. The armored truck backed up to the entrance, opened its rear doors and projected a crane. Two men came out of the armored truck. They went with Joe and his two men down the stairs. They were all gone for five minutes.

Then the two professors appeared. They were dressed for the street, and they were not handcuffed. At the head of the stairwell, they turned around and seemed to be directing activities below. The crane hook was lowered. Then it began to raise, and Bossy, plainly seen through her crate, appeared. The crate was swung into the maw of the truck. Hoskins, an apparently enthusiastic Hoskins, the way he was grinning, climbed in the truck behind her.

Carney could hold back no longer. He ran down the alley toward them, oblivious to the tommy-guns which swung in his direction. Joe said something to the policemen, and the tension seemed to ease.

"I've got to know! I've got to know!" Carney heard himself shouting.

Joe walked out past the tommy-guns and took Carney's hand.

"Glad you came, Carney," he said. "I was afraid you'd hide and we couldn't find you. We need you, Carney. We still need you."

For he suspected that Carney, like Mabel, would have lived enough and learned enough to know that he did not have all the right answers.

TO BE CONTINUED

SOME PEOPLE LABOR ON LABOR DAY . . .

The San Francisco Science Fiction Convention Committee, for instance.

If you've got a chance—why not try the Convention. September 3rd to 6th in San Francisco. Contact Les Cole at Box 335, Station A, Richmond 2, California.



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BY P. SCHUYLER MILLER

PRACTICING AND PREACHING

Philip Wylie, who has done his own share of science fiction—the “Worlds Collide” books with Edwin Balmer; “The Disappearance”; “Gladiator” among others—is also one of our severest and most vehement critics. He is inclined to accept our own claim that we represent the literature of the future, and belabors us in his most unrestrained language for not living up to that claim. If we are the writers who can see through and around the complexities which a technological culture has heaped on mankind, he says, why don’t we get at it and write books which Show The Way to the

almost perfect world?

Now, Mr. Wylie is also the author of the *Saturday Evening Post’s* “Crunch and Des” stories about big-fish fishing in Florida waters, which to a non-fisherman like me read like some of the most pleasant light entertainment I can hope to find. He by no means practices what he preaches, it would seem, and my guess is that he relies on his stories of pure entertainment to pay the bills while he is pouring his anger and enthusiasm out into this or that polemic designed for the social good.

The latest example is “Tomorrow,”

a story about what happens to twin mid-western cities when the first A and H bombs begin to fall. It's from Rinehart, publishers of the Tucker straight science fiction: early 1954, price \$3.50. Maybe it'll be out in a pocket book by the time this gets into print, as "The Disappearance" is.

This is a legitimate enough theme, which we've all seen over and over and some of us have used. But Philip Wylie turns it into a clumsy tract and leaves himself with no support for his own arguments except the old and feeble one: "Don't do what I do; do what I say!"

The first two thirds of "Tomorrow" are loaded with all the wornout stereotypes, stock characters and clichés which characterized the maudlin '90s. We visit Green Prairie, the Good American Town which takes Civil Defense seriously, and its neighbor over the river, River City, which sneers and scoffs. We have the good but modest Sector Warden and his wholesome family, including the Young Air Force Lieutenant who is in love with the Beautiful, Brilliant, Wholesome Girl Next Door. Her father is a Wealthy Rotter, her mother a No Good. They also laugh at Civil Defense, Play the Horses, try to Sell Their Daughter, and wind up Embezzling to cover Gambling Debts.

Over in River City are the jolly, grasshopperish cousins who won't take Civil Defense seriously either, and who

are well punished for it by being hashed into rather small bits, slowly and as an Object Lesson to Scoffers elsewhere. There is the Town's Richest Woman who is slightly inconvenienced by a Civil Defense drill and forces the Weak but Fundamentally Honest City Editor of her paper to switch from Western style to sidesaddle and smash the Whole Boondoggling Mess . . .

When the bombs do begin to fall—and here, let me say, Mr. Wylie's *SEP* and *Blue Book* experience get the better of him and he turns in a gripping chunk of description—naturally the Scoffers are most hideously destroyed, the Good triumph in a big way, the people of the Bad Town turn out to be looters, rapists, hit-and-run drivers and scowflaws, and even race prejudice is temporarily set aside while the flames are crackling and the blood flowing freely. It all winds up very realistically on the next-to-last page with the government starting a survey to discover why Green City, in the whole United States, Came Through So Nobly. But we don't need any survey; we know why . . .

Philip Wylie obviously feels very strongly that we, as a nation, are asking for the worst kind of trouble in treating Civil Defense as a boring sort of game which some stupid schmoes down the block let themselves get all worked up over. He sat down at his typewriter or took up his quill and wrote a 372-page pamphlet which is supposed to scare us back in line, and

fast! And the result is no more believable than the play someone dug out of Grandma's old trunk and put on for the Ladies Aid Society.

Here we have the horrible example of a good writer becoming a bad writer by trying to be a Real Good Writer—if you get what I mean. If Philip Wylie had put into this book the warm humanity that Judith Merrill put in her novel of the first bomb, four or five years ago—or is it more?—he'd have proved his own case up, down and across the board.

What makes the contrast so much the stronger is that on the same shelves of the same bookstores a practically unknown writer of occasional science-fiction named Edgar Pangborn has taken a wornout theme that's been run into the ground in the last year, and made of it the finest, most human, most appealing science fiction novel I've seen in a long, long time.

"A Mirror for Observers" (Doubleday & Company, Garden City. 1954. 222 pp. \$2.95) is that oldest of gags, the "aliens among us" gambit, done as it's never been done before and is unlikely to be done again. I'll unreservedly rank it well over anything I've seen in the last twelve months, including "The Demolished Man" and "More Than Human," and have a hunch it will be very close to the top in all 1954 ballots.

The situation is very much like that in Lewis Padgett's good "Mutant."

Elmis is a Martian, doctored up with plastic surgery to look human and stationed in a small New England town to help the best in humanity to make the most of itself, biding the time when Men and Martians can live openly, side by side. But there are the Abdicators, as there were the paranoid Baldies, whose aim is to get mankind out of the way and make room for themselves. The story is of the battle between Elmis, as "Benedict Miles," to protect the talented child, Angelo Pontevocchio, from the Abdicator, Namir, and his unexpected ally. And Elmis' greatest aide is another child, Sharon Brand. Before the end, the Abdicators have launched a plague which is intended to wipe Men and Martians off the Earth.

There is only one quibbling (and I use "quibbling" with the intent and emphasis many G.I.'s put into a slightly shorter word with the same termination)—flaw to be found in "A Mirror for Observers." It was in Edgar Pangborn's previous book on an equally trite theme, almost as well done, "West of the Sun." His aliens are far too human.

They're not alien at all, they're people—and the kind of people we've all known and liked and loved. We're intensely, personally concerned with everything that happens to them. And trivial entertainment or not, that's *writing*. It's practicing what Brother Wylie preaches. And if men still wore vests, it should make every

male s-f fan bust three vest-buttons and every female fan even more female.

WILD TALENT, by Wilson Tucker. Rinehart & Co., New York. 1954. 250 pp. \$2.50

Here's another of the varied and dependable items from the Tucker typewriter, an original novel which you won't have seen serialized although it will undoubtedly show up as a reprint one of these days.

Paul Breen gradually discovers that he has certain telepathic powers. He unfortunately lets knowledge of this fact reach the FBI, and shortly finds himself spirited out of an army camp and into a virtual prison, while Central Intelligence tries to develop him as a mental contact with its agents behind the Iron Curtain. But there is clearly a leak somewhere, and there is the scream which Breen has "heard" at the moment when an assassin's rifle lined up on him . . . and one by one his few friends are being drawn away.

The telepath theme is developed with much less melodrama than in most stories of this kind: smoothly, quietly and convincingly. The mystery elements are less important than the problem of Paul's own relationships with his normal captors and their society. The book may not be as popular as "City in the Sea" or "The Long Loud Silence," but I think it's a better job. (Incidentally, prob-

ably as a bit of Tucker puckishness, you'll find a galaxy of s-fdom among the characters: Ray Palmer an FBI agent, Peter—rather than Groff—Conklin, Slater and Carnell, the early-lamented Bixby, the Irishman Willis. But tell me, friends, where'll I find Karen?)

BORN LEADER, by J. T. McIntosh. Doubleday & Co., Garden City. 1954. 221 pp. \$2.95

Here's a top-notch original by the Scottish author of "World Out of Mind" to start 1954 for Doubleday—and much better than the author's previous book.

We find three generations of refugees from Earth on the rather idyllic, pastoral planet Mundus of Brinsen's Star, fourteen light-years from the Sun. They are the members and descendants of a crew of picked youngsters selected to rebuild a humanity which seemed set on destroying itself. Hard rules were made by the pioneers, to prevent such destruction from coming again—but the new generation, who never knew Earth, resent the restrictions and revolt against them.

Meanwhile, on Mundus' companion planet Secundus, a very different lot of refugees are building a new society of their own. And when a flare in the sky tells them that Man has succeeded in destroying himself, his planet and his sun, they set out to bring the erring pastorals of Mundus into their

fold. The problem: how will the strengths and drives of both cultures, the static and the pelagic, be resolved without finishing off mankind?

THE COMING OF CONAN, by Robert E. Howard. Gnome Press, New York. 1953. 224 pp. \$3.00

Here are the first—and to me some of the best—of the fantastic, bloody exploits of Conan the Cimmerian in a world that never was.

You have, by way of bonus, a picture of the framework of imaginary history and mythology which Howard constructed as a setting for his hero-tales. This is set forth in a long essay, "The Hyborian Age," published in part in the fanzine *Phantagraph* and later as a mimeographed booklet by a special fan group. The latter edition included a biography of Conan which Dr. John D. Clark and I had worked out, setting the stories in order. This is now slightly emended by Dr. Clark to fit in a small number of posthumously discovered tales—edited by Sprague de Camp—and used to connect the separate "chronicles."

Also as introduction there are two of the "King Kull" tales, "The Shadow Kingdom" and "The Mirrors of Tuzun Thune," set in Howard's world some nine thousand years before Conan. The latter's adventures take him from the age of seventeen, in "The Tower of the Elephants," through the assorted sorceries and bloodshed of "The God

in the Bowl"—one of the new ones—"Rogues in the House," "The Frost-Giant's Daughter"—another new fragment—and "Queen of the Black Coast," some six years later.

There should be about one more book between this and the already published "Sword of Conan" (Gnome, 1952), "King Conan" (1953) and the final "Conan the Conqueror" (1951). They are, of course, strictly for Conan followers.

THE SINISTER RESEARCHES OF C. P. RANSOM, by H. Nearing, Jr. Doubleday & Co., Garden City. 1954. 217 pp. \$2.95

What "Gavagan's Bar" has become to present-day off-trail fantasy, Dr. Nearing's tales of Professor Cleanth Penn Ransom of the Mathematics Department at Uh-Uh University are to soberly zany science fiction.

The stories from *Fantasy and Science Fiction*—heir to the tradition of *Unknown Worlds*—have here been rearranged and hooked together with a string of continuity as Ransom tries to win a \$50,000 endowment for devising a gadget which will serve the liberal arts, and to avoid the Siberia of a TV lecture-course. He tries, in succession, a poetry-writing robot, teaching mathematics by voodoo, using a brain-tumor to activate an electric organ, adding a luciferase touch to the part of the Ghost in "Hamlet," solving the marital problems of tri-

sexual Martians, painting pictures by subconscious mechanization, manipulating a four-dimensional basketball, illuminating *Revelations* with a hermeneutical doughnut, and—aided by his colleague McTate of Philosophy—running a seedy arena in Roman Illyria.

There's nothing like it in print. Get it if you believe humor has a place in literature and if you can visualize Dunsany's Jorkens blended with Lewis Padgett's Gallagher, the Gavaganites and P. G. Wodehouse. I wish Edd Cartier had been around to illustrate it.

MAN OF MANY MINDS, by E. Everett Evans. Fantasy Press, Reading, Pa. 1953. 222 pp. \$3.00

In the younger days of science fiction, this story of a man who tries to develop his latent ESP talents in the public service, might have gone over. There's far worse stuff in the magazines still. But there's so much better writing between hard covers now—such as Wilson Tucker's "Wild Talent" on the same theme—that I'm afraid it won't stand up.

Cadet George Hanlon, who has this secret talent, goes through all the tedious ritual of being accused of cheating and broken out of the Inter-Stellar Corps in order to go into the Secret Service. His first job, to find out what deviltry is cooking on the planet Simonides. He proceeds in all

the weary old ways, lands on a fairly interesting world of vegetable beings, finds he can get into other minds and sometimes take them over—much as Kinnison has been doing in the "Lensman" yarns—and comes crashing through.

"Lensman" Smith, in an introduction, credits George O. Smith and me with being able to accept space opera as space opera and enjoy it as such. But Mr. Evans first and original book isn't in the E. E. or George O. Smith league at all. It's the first of a series, and maybe the later books will pick up over this, as the "Lensman" stories have over the beloved "Skylark" tales.

OUT OF THE DEEPS, by John Wyndham. Ballantine Books, New York. 1953. 185 pp. \$2.00; paper 35c

Here, to my taste, is a much better book than the author's extremely popular "Day of the Triffids." It has that characteristic, deceptive quietness which the English handle so well—the quality which has helped H. G. Wells' "War of the Worlds" to last.

Fireballs, in vast numbers, plunge into the deepest parts of the Earth's seas. It appears, eventually, that they're probably from Jupiter. Efforts to probe with dredges are violently resisted; then defense turns to attack. Ships are dragged down, first a few then dozens. And finally strange "sea tanks" begin to raid the shorelines of

the world for human food about as we net cod. And the seas begin to spread over the face of the Earth . . .

Ballantine is one publisher who turns out *good* blurbs. "Frightening because it is realistic and intelligent," they say on the PB (should be BB, back to back) edition. I agree.

SCIENCE FICTION CARNIVAL, edited by Fredric Brown & Mack Reynolds. Shasta Publishers, Chicago. 1954. 315 pp. \$3.50

The only trouble with this anthology of humorous science fiction, collected by two expert practitioners of the art, is that someone else got to all the best stories first. As it is, they've had to re-anthologize Murray Leinster's "A Logic Named Joe," and it comes out one of the best in the book.

Other good ones, to me, are Richard Matheson's "SRL Ad" ("LONESOME VENUS GAL . . ."), Nelson Bond's "Abduction of Abner Greer," and parts of Henry Kuttner's "The Ego Machine," which is set in Darkest Hollywood and, therefore, has to be funny. But I get—and got—a good many more boffos out of the misadventures of C. P. Ransom or the goings-on in Gavagan's Bar.

In the book you'll find Robert Arthur's "The Wheel of Time" (the tricycling chimps with pocket time-capsules); Larry Shaw's "Simworthy's Circus" (love my Nimoon, love me);

H. B. Fyfe's "The Well-Oiled Machine" and William Tenn's "Venus and the Seven Sexes" (sort of liked them both, too); Clive Jackson's tidbit parody "The Swordsman of Varnis" (yep—that's good, too); Brown's own "Paradox Lost" (a switch on time-travel); Eric Frank Russell's talking-horse yarn, "Muten"; Reynolds' episode of the invading Martians and the hill-billy idiot, "The Martians and the Coys"; and George O. Smith's "The Cosmic Jackpot" (a gadget story with a gimmick).

This was a good idea which the same editors should have tried three years ago, before the looting began.

AN INDEX ON THE WEIRD AND FANTASTICA IN MAGAZINES, Bradford M. Day, 127-01 116 Ave., S. Ozone Park 20, N. Y. Mimeographed. 162 pp. \$2.00

For the collector here is an aid to rank with the other Day's "Index to the Science Fiction Magazines." It's mimeographed, in an edition of only four hundred copies (mine is No. 373).

What you get are issue-by-issue contents of *Weird Tales*, *Strange Tales*, *Thrill Book*, *Blue Book* and many others not included in previous indexes. Some, for example the surveys of fantasy and science fiction in the various Munsey magazines, are admittedly incomplete. Finally there's a checklist showing what issues of fantastic magazines appeared when. Wil-

liam Evans did most of the compilation; A. Langley Searles published parts in his *Fantasy Commentator* and Julius Unger the *Weird Tales Index*. Many others have helped.

It's invaluable bibliographical information if you're a collector, an anthologist, or maybe just a reader who likes to smell out the oldies.

ONE, by David Karp. Vanguard Press, New York. 1953. 311 pp. \$3.50

You'll find no gadgets in this bitter novel of the next century, merely a picture of a totalitarian State—never identified—grinding away at the personality of one randomly selected "heretic." It's "1984" again, paradoxically much closer to our own time and society and without the gadgets which some found implausible in Orwell's book.

Professor Burden has gone through the years dutifully reading lips, reporting his associates' heresies to the Department of Internal Examination, priding himself on his service to the State. One day his latest report, tenth in the day's mail, is pulled out and forwarded for routine processing. Burden is called in for questioning—and he never leaves, for his interrogators discover that he is that most dangerous of all threats to the *status quo*, an unconscious heretic who must be "cured." How this brain-washing is

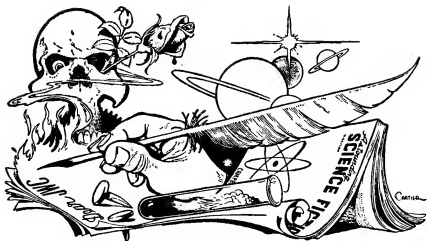
accomplished, and how it fails, is the story.

"A state is immortal," says Burden's chief inquisitor, Lark. "If a stooped, balding professor of English at a small college can topple it by remaining obstinately individual—well, that's unthinkable . . . unthinkable and untenable. The key to this man has always been his pride, his vanity, his unwarranted belief that he is a creature apart, that he possesses some single, indefinable identity that is his and his alone. And it is the retention of this one idea that stands between the State and a thousand years of rule."

And again: "Heresy is madness—the most subtle sort. When you do not believe as all others do, then you are mad. The State, as directed by its citizens, determines reality. What everyone believes to be reality *is* reality. . . . To suppose any other reality is to be a heretic. To be a heretic is to be insane."

If Burden were a physicist instead of a professor of English, I'm sure no reader of this magazine would reject "One" as science fiction. It's closer to Koestler's "Darkness at Noon" than to "Hide! Hide! Witch!", but in a state without individuality there can be no science. To quote Lark again: "Technological improvement—well, we don't encourage that, do we?"

THE END



BRASS TACKS

Dear Mr. Campbell:

The Wallace West article in your April issue, entitled "Washday Minus Zero," contains several errors and some rather farfetched speculations. Some of these errors misrepresent the methods used by the Brookhaven National Laboratory for the safe disposal of radioactive wastes. We trust you will correct these false impressions in an early issue.

Pumping contaminated waste down into the Lloyd sand has never been considered as a method for disposing of it; this is, however, one of a number of alternatives suggested in the unlikely event that storage facilities should ever prove inadequate. Even if

this were done, conditions quite different from those cited by Mr. West would actually prevail.

Point one, ground water in the Lloyd sand does not flow in the direction of Great Neck. It moves very slowly, perhaps at a rate of an inch a day, in the opposite direction, until it reaches a depth of 2000 feet under the south shore of the island. It then turns and moves slowly upward, emerging, it is believed, as springs in the bed of the ocean. This journey must take many thousands of years.

Point two, it is far from true that radioactivity "would be practically as deadly as ever" after centuries of existence. Only a small fraction of

Brookhaven wastes has a half-life of as much as thirty years, and so would have decayed away before moving out from under the Laboratory site. Also, soil materials would certainly absorb much or all of the activity; we, therefore, believe it impossible for even inert ingredients to travel any distance.

The article also claims that disagreement over waste disposal policy "already had led to the resignation of one Brookhaven physicist." I should think the Laboratory management would be the first to know if any of its staff were moved to resign in protest over a policy matter. Mr. West has been good enough to identify the individual referred to for us. This person was never on the Brookhaven National Laboratory payroll. He did spend some time on the site in the employ of another organization and left for reasons which, as far as we know, had no connection, direct or indirect, with waste disposal policies. Neither he nor any Brookhaven employee ever gave such reasons for leaving the site.

We at Brookhaven appreciate the interest you and Mr. West take in keeping the record straight. You have published good factual articles on atomic energy in the past, and we know we can look forward to that kind of reliable coverage from now on.—John Burt, Public Information, Associated Universities, Inc., Brookhaven National Laboratory, Upton, L. I., N. Y.

Confusion arose over "worked at" and "worked for"; our apologies for not cross-checking.

Dear John:

I am extremely sorry that we have been caught in the middle of a long-standing quarrel between Brookhaven and Mr. M. M. Reiss as the result of publication of the "Washday Minus Zero" article.

More than a year ago, you will recall, you asked me to interview Mr. Reiss. During the course of that interview, my informant mentioned that a physicist at Brookhaven had resigned because he disagreed with the way the laboratory handled both information and its disposal of radioactive wastes. He then described the waste disposal situation after assuring me that all of the information he was giving me had been cleared by the proper authorities.

I regret that I did not put Mr. Reiss' references to Brookhaven in direct quotes, but he insisted that his statements were common knowledge and I had no cause to question his veracity. That the disposal problem has become serious all over the world is shown by two other sources that I did quote directly and at length, i.e., articles and editorials in *Nucleonics*, a leading trade magazine published by McGraw-Hill, and statements by Dr. H. J. Muller, a famous scientist.

Now I wish to comment on Mr. Burt's letter to you. As nearly as I

can understand it—the first sentence in his second paragraph is confusing—Mr. Burt quarrels with nothing in the article except references to Brookhaven. He contends:

(1) "Pumping contaminated waste down into the Lloyd sand has never been considered as a method for disposing of it . . ." My article makes no such allegation. It says instead, on pages 94 and 95, that if enemy bombs ever should scatter the wastes in storage and cause them to contaminate the shallower water table under Brookhaven, the plan is to pump that contaminated *water* into the Lloyd sand until it runs pure again.

(2) In the second part of the same sentence, Mr. Burt seems to reverse himself by saying: "This is, however, one of a number of alternatives suggested in the unlikely event that storage facilities should ever prove inadequate." He adds that ground waters in the Lloyd sand flow toward the South Shore rather than toward Great Neck and that any wastes that might be dumped into them would decay or be absorbed before they traveled "any distance." I am not an expert on such matters but I do know that all parts of Long Island are populated. And even the experts disagree about the rate of absorption and long-term effects of radioactivity. As Dr. Muller indicates, future generations must judge us.

(3) Mr. Burt's final point is that the individual I identified for him as

having resigned from Brookhaven did not work on the laboratory payroll and did not quit over a difference of opinion about waste disposal. This is a question of fact upon which I am unable to comment.

As Mr. Burt says, we all are interested in keeping the record straight. I have tried my best to straighten it through this letter.—Wallace West.

The problem of contamination cannot be argued logically; logic works when, and only when, all relevant facts are known—and here, no one knows what "all relevant facts" means!

Dear Sir:

Many times over the past dozen years I have been tempted to put in my two cents worth in reference to some story or article—but have always manfully managed to resist. The April issue, however, has a very interesting article—"Washday Minus Zero"—that I just have to comment on for it touches upon work that required my undivided attention for two years. This is radiological decontamination, or rather, to be specific, the removal of fission products from various surfaces. The enclosed reprints refer only to part of our work on this subject, but I can assure you that hundreds upon hundreds of tests performed upon all kinds of surfaces invariably agreed with the published results. Our work showed conclusively that formu-

lations containing certain agents called sequestrants, such as the EDTA mentioned in the article, do give the most efficient decontaminants. However, and this is one important point I want to make, there are other compounds that are just as effective as EDTA for the removal of fission products. I am fully aware of the wonderful properties of EDTA, and the vigorous advertising campaigns that its manufacturers have been carrying out are certainly impressive, but other products, particularly Calgon—glassy sodium hexametaphosphate—are at least as effective.

Of equal importance with the choice of the proper sequestrant is the actual formulation employed. Even the best sequestrant imaginable, used in the wrong formulation, will give exceedingly poor results—and here we come to the second point I would like to make. Radiacwash just does not come up to the best household detergents such as Tide and Surf. Of the special decontaminants we have tested, only one can be called really efficient—and it definitely is not Radiacwash.

I would also like to point out a minor slip—in the same article. The neutron flux at the Chalk River reactor is given as sixty million (6×10^7) neutrons per square centimeter per second. Actually, according to several references I have, the flux at Chalk River is seven trillion (7×10^{12}) to forty trillion (4×10^{13}) neutrons per square centimeter per second, depend-

ing on the location within the pile.—Gonzalo Segura, Jr., Chief Radiochemist, Foster D. Snell, Inc. New York 11, New York.

Thanks for the further information. Now—how about giving us a full discussion on detergents and sequestrants?

Dear John:

May I call the attention of your readers to two errors that have transpired in my article "Orthodoxy in Science," in ASF, May '54, pp. 116-29?

It was not Dana to whom Agassiz went with a request that he keep quiet about his conversion to Darwinism. It was Joseph Henry, the discoverer of self-induction, the man who furnished Morse with most of his telegraphic ideas, the first Secretary of the Smithsonian Institution, and one of the two greatest nineteenth-century American scientists. (The other was J. Willard Gibbs.) Agassiz begged Henry to suppress his opinions lest they upset people's religious beliefs. Henry, who detested controversy anyway, acceded and kept mum on the subject the rest of his life.

And it was not "last year" that Professor Spitzer was dismissed from Oregon State College—or to be exact, was denied a renewal of his appointment—but in 1949.

Regarding Mr. Baecker's letter

about the disadvantage of spelling homophones phonetically, let me point out that "aural" and "oral" are not necessarily homophones. That is, they are homophones in some dialects but not in others, as are such pairs as balm/bomb and pitted/pitied. Many Americans retain the distinction, lost in Southern British, between such pairs as horse/hoarse and morn/mourn, pronouncing the first word of each pair with an *aw* and the second with an *oh*. The words in question, therefore, could be transcribed something like /ooral/ and /oural/.—L. Sprague de Camp

The real trouble comes from homonyms that are thought to be a single word—the prize being the word "is." "Play" is worth looking up in the dictionary too!

Dear Mr. Campbell:

Murray Leinster's article "To Build a Robot Brain" in the April *Astounding* has stimulated my mental processes. Frankly, the greater part of the article contained little that was new to me; the source of the stimulation was the punch-line "You learned it in Sunday School." I had already read your editorial, in which you propound the Noise Theory of Senility, with largely passive interest, but the notion of noise—a phenomenon which, in the form of tube hiss or "grass" on a radar display, is very much in my line

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of business—stuck in my mind. For some reason, this latter organ took Leinster's punch line, added it to—or, more correctly, operated with it on—the concept of noise, and came up with a number of assorted thoughts and questions which you may find amusing.

Human institutions are by custom regarded very much as if they themselves were individuals. "The United States," "Canada," "England," "Russia" regularly take decisions, make suggestions, impose restrictions and perform other acts of volition in our thinking, just as if they had concrete existence independently of their attributes—people, rulers, territory. Joint-stock companies are "persons" for many legal purposes. And so on. Now, if there's anything in your theory, the problem of aging in human individuals resolves itself into one of a gradually worsening signal-to-noise ratio—and I am inclined to suspect that something of the sort happens to human institutions, too. Not necessarily corporate bodies—General Motors, the Boston Bruins or Holland—only; abstracts such as the practice of shaking hands aren't immune. Handshaking is now just a symbol of friendship, but once it conveyed definite and valuable information: "I haven't got a dagger up my sleeve." Since it is quite customary to shake hands with people one dislikes cordially for politeness' sake, the act doesn't even necessarily signify friendship—it has degen-

erated into something very close to pure noise. As for the corporate bodies, it is well known that these tend either to grow or to be absorbed—except, perhaps, in special cases. Unfortunately, once a commercial concern has grown beyond a certain size internal communications become a problem. (In a really big firm, one department never quite knows what any of the others are doing.) In other words, the degree of organization becomes smaller, and increasing disorganization leads to decreasing signal-to-noise ratio. (Most people who have worked for any really large organization would confirm that there is a tendency for coördination and coöperation between departments to be poor.) You can say, if you like, that the firm is so large it has become dehumanized, or you can talk about the law of diminishing returns. I suggest that these things may be related to your noise idea. (By the way, the noise level in a bureaucracy is high. Great size breeds bureaucracy, which is an attempt to solve the problem of internal communications. Cartels, and Communist states, are riddled with it—)

An editorial in another SF magazine points out that the Jewish food laws have lost the meaning which they had in Moses' time, since we can now (usually) handle and distribute food without distributing ptomaine and dysentery at the same time. If Kinsey wasn't wrong by more than 20 db (and, although there are opinions to

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the contrary, my own limited observations lead me to believe that 1 db is his maximum error) another Hebrew institution (how many people realize that our sexual mores are almost entirely Hebraic in origin, and almost unique in their puritanism and neurotic potential?) is honored more in the breach than the observance. As is the case with handshaking, there is a large element of noise in these institutions, though at the time of their inauguration the signal content was much higher. The difficulty here is to distinguish signal from noise.

The same difficulty arises with religion in a more general sense. Though Christianity and, say, Mohammedanism both probably—in my view—include aspects of the truth, at least one of the two must contain a heck of a lot of noise. Which? A Christian says, "Islam"; a Moslem says "Christendom is the 'noisier.'" Try and imagine

yourself to have been brought up in a non-Christian and non-Moslem community; now make your choice. (You can't, of course, entirely imagine such a thing. You'll still plump for Christianity, unless you're a convinced atheist, as containing more truth; a man of Moslem background would plump for Islam in the same circumstances. This, of course, gets us nowhere, except that it illustrates my point. Don't, please, mention the "obvious" ethical superiority of Christianity. I agree, but a Moslem wouldn't! So we are still no further.)

A sort of conclusion from all this is that precisely the same thing-in-itself may be almost pure signal in one set of external circumstances, and pure noise in another. A handshake is now pure noise. To me, the Japanese language and Chinese music are practically pure noise, though they aren't to lots of people. Even religious ritual is

noise to a regular churchgoer, because it no longer contains any information *for him*. The first time I heard it—unless I was too young—the Anglican morning service—Matins—probably meant something to me, but after several hundred regular repetitions I can write it down, word for word, from memory.

I wonder if there's anything in the idea that a signal, if it's repeated often enough, turns into noise of its own accord? If one already knows the signal, its repetition contains no fresh information, and no-information and noise have much in common. (I put it that way because I might get involved in an Undistributed Middle if I were to be more definite.) I don't know how far the idea can be extrapolated, but, if increasing noise level is the inevitable accompaniment of increasing age (Second Law of Thermodynamics?) it's a pretty poor outlook for geriatrics.

It's only fair to add that, while I do not go all the way with Leinster's punch line, which implies without saying that What you Learn in Sunday School is true in detail—including Christian dogma and Christian mores—I am inclined to agree in principle that there is a Supreme Being. If this is not so, as the materialists claim, then—as they go on to say—the universe is without meaning. It is therefore pure noise. But the universe displays a considerable degree of organization. Therefore . . . —C. F. Kerry Gaulder, Hamilton, Ontario, Canada.

Information Theory doesn't have the whole answer yet, by any means; it's still just an immensely hopeful start in an inadequately explored direction. The greatest gap in Information Theory is that it is incapable of defining "meaning," and frankly admits that fact. But "information" that has no meaning is noise! And while it is valid to say that information is the unpredictable part of a message, it's also true that information—in this sense—has no meaning unless it serves to predict—which means that only in redundancy is there meaning! If I say "Numes kashlot ormlly" it is, under information theory concepts, pure information, because you could not predict I'd say that at all. Unfortunately, while it's pure information, it must have zero meaning!

We have a very great deal to learn about information, meaning, and similar developments. In the meantime, it is perhaps wise to recognize that while human beings make mistakes, they don't go completely haywire, and stay haywire completely, for five thousand years. We wouldn't have survived at all if that were the case. Before deciding that any long-held, and widely-held concept is "Sheer nonsense!" it's a good idea to question yourself. That Christianity-Moslem question is a sound one. Why did Islam originate Science? Are they to be considered so badly off, if they achieved that?

—Continued from back cover

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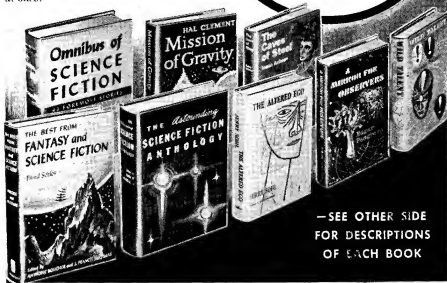


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